



PACIFIC CREST ENVIRONMENTAL

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November 6, 2014

Mr. Shawn Rapp
Project Manager
NWR Cleanup Section
Department of Environmental Quality
Northwest Region Portland Office
2020 Southwest 4th Avenue, Suite 400
Portland, Oregon 97201-4987

**RE: STORMWATER SOURCE CONTROL EVALUATION REPORT AMENDMENT
CHRISTENSON OIL COMPANY
3821 NW ST. HELENS ROAD, PORTLAND, OREGON
OREGON DEQ ECSI FILE 2426
PACIFIC CREST PROJECT NO. 123-001**

Dear Mr. Rapp:

Enclosed is a copy of the *Stormwater Source Control Evaluation Report Amendment*, prepared by Pacific Crest Environmental, LLC for the Christenson Oil Facility located at 3821 Northwest St. Helens Road, Portland, Oregon.

Please contact the undersigned at (425) 888-4990 if you have any questions regarding this submittal.

Sincerely,

PACIFIC CREST ENVIRONMENTAL, LLC



April Wiebenga
Project Geologist

cc:

Ms. Kristine Koch, EPA (hard copy & disk)
Mr. Richard Muza, EPA (hard copy & disk)
Mr. Larry Lesniak, Christenson Oil Company (electronic copy)
Ms. Katherine Felton, Murphy Armstrong & Felton LLP (electronic copy)
Mr. Chris Wohlers, Wohlers Environmental (electronic copy)

MEMORANDUM

TO: Mr. Shawn Rapp, R.G., Oregon Department of Environmental Quality

FROM: Ms. Lauren Carroll, R.G., Pacific Crest Environmental, LLC *LC*
Ms. April Wiebenga, Pacific Crest Environmental, LLC *AW*

DATE: November 6, 2014

RE: Stormwater Source Control Evaluation Report – Amendment
Christenson Oil Company
3821 NW St. Helens Road, Portland, Oregon
ECSI# 2426

PN: 123-001

The following responses have been prepared by Pacific Crest Environmental, LLC on behalf of HAJ, Inc. (d/b/a Christenson Oil) for the Christenson Oil Plant located at 3821 NW St. Helens Road in Portland, Oregon (the Site). The following comments **in bold** were provided by the Oregon Department of Environmental Quality in response to the *Stormwater Source Control Evaluation Report* (SCE Report), dated February 19, 2014.

- 1) Tank Farm A is surrounded by an earthen berm such that any stormwater collected there may infiltrate to groundwater. Please discuss the observations and/or the inspections made of this containment system, how small spills are managed, the materials that are used in the earthen containment, and the likelihood that oily water may migrate offsite.

In accordance with the facility's *Spill Prevention Control and Countermeasure* (SPCC) Plan (Wohlers 2009), Christenson Oil personnel conduct daily visual inspections of equipment, storage areas, and secondary containment structures with the purpose of detecting leaks, spills, or damaged or malfunctioning equipment. A monthly visual inspection checklist is also completed, which provides a written record of visual inspections of the aboveground storage tanks (ASTs) and associated equipment. Checklists are signed by the facility manager and maintained with the SPCC Plan for a minimum of three years. Also in accordance with the SPCC Plan, minor spills or discharges are quickly cleaned up with absorbent materials and are disposed of appropriately by Christenson Oil personnel. According to onsite personnel, precipitation percolates through the compacted dirt base of the containment area and has not been

observed to overflow the surrounding berms. The best management practices (BMPs) in place effectively preclude the off-site migration of oily water from the Tank Area A.

- 2) Section 8.0, Subsection 5 concludes that all stormwater contaminants investigated at the Site fall within typical ranges per the rank-order curves. Representative data (including NPDES data) should be plotted on the curves to demonstrate this. Total PAHs, total LPAHs, and total HPAHs should also be summed and evaluated. BEHP appears to fall well above the knee of the curve. TSS, PAHs, and perhaps some metals appear to fall within or above the knee of the curves. Please plot these values and discuss the results.**

Stormwater and sediment samples collected as part of the source control evaluation (SCE) as well as NPDES 1200-Z stormwater samples have been plotted on the rank-order curves (Attachment A). Due to the absence of polychlorinated biphenyls (PCB) detections in any of the samples collected, total PCBs were not evaluated on the rank-order curves. In other cases, analyte concentrations which were reported as non-detect were plotted at a value equivalent to half of the achieved detection limit.

The stormwater sampling data are considered to be representative of current Site discharges. Sediment sampling data, although helpful in stormwater characterization, are not considered to be representative of current Site discharges due to the interception of sediment by the oil/water separator and the routine maintenance performed on catch basin CB-1.

An evaluation of the stormwater data with respect to the rank-order curves indicates that Site discharges are consistent with light industrial operations, and that BMPs implemented at the Site are successfully controlling stormwater discharges.

The plotting of Site stormwater data on the rank-order curves indicates the following:

- One stormwater sample detected a concentration of cadmium of 0.649 micrograms per liter ($\mu\text{g/l}$), which falls within the knee of the curve.
- One stormwater sample detected a concentration of chromium of 9 $\mu\text{g/l}$, which also falls within the knee of the curve.
- All other stormwater constituents, including bis(2-ethylhexyl)phthalate, total PAHs, and TSS, fall below the knee of their respective curves.

The plotting of Site stormwater sediment data on the rank-order curves indicates the following:

- Sediment samples collected from the catch basin filter and catch basin bottom detected concentrations of bis(2-ethylhexyl)phthalate of 32 milligrams per

kilogram (mg/kg) and 38 mg/kg, respectively, both of which fall within the knee of the curve.

- The sediment sample collected from the catch basin bottom detected a concentration of cadmium of 2.87 mg/kg, which falls within the knee of the curve.
- All other stormwater sediment constituents fall below the knee of their respective curves.

3) The report states that the catch basin, oil-water separator and culvert are above the groundwater elevation, but does not indicate at what elevation they occur. Any information about other utility piping that may carry groundwater to the street conveyance system to the river would also be helpful.

The elevation of the catch basin grate is 35.82 feet above mean sea level (amsl). The bottom of the catch basin is 2.5 feet below the grate, giving it an approximate elevation of 33.32 feet amsl. For drainage purposes, the catch basin is at a lower grade than any of the surrounding features, including the oil/water separator and the connecting conduit. Groundwater elevation data collected at the Site from 2006 to the present indicates that the average groundwater elevation in monitoring wells MW-2, MW-3, and MW-4 is 30.01, 30.81, and 30.43 feet amsl, respectively. Based on this information, there is a minimum separation of 2.51 feet between the bottom of the catch basin and well MW-3, which has the highest average groundwater elevation. Heritage Surveying of Portland, Oregon conducted a survey of the stormwater system components, which is provided as Attachment B.

The subgrade utilities servicing the Site include the City of Portland stormwater system described in the SCE and a municipal water line. The City of Portland stormwater system traverses NW St. Helens Road to the northeast and continues onto the Shell property. The water line to the Site connects from the City of Portland water main (approximately 5 feet below ground surface [bgs]) which runs parallel to the north side of NW St. Helens Road.

A gravity-fed City of Portland sanitary sewer line (approximately 9 and 14 feet bgs) runs parallel to the south side of NW St. Helens Road. A natural gas line runs beneath and parallel to the south side of NW St. Helens Road (approximately 2.5 feet bgs). The locations of the utilities are presented on the Detailed Site Plan (Figure 1).

4) Figure 2A of the Wohlers 2012 work plan shows Tank Farm B having a drain valve and discharge path on to a gravel roadway toward St. Helens Road catch basins. What is the purpose of this valve, and when/how is it used? Additionally, the same figure shows a similar line/valve depicted for catch basin CB-2, which is located inside the building. Please discuss the piping, valve, and purpose of the CB-2 inside the building.

The purpose of the valves located in both Tank Area B and catch basin CB-2 is to provide emergency drainage for stormwater in the case of a high intensity precipitation event. Mr. John Horstman, Vice President of Operations at the Christenson Oil facility, reports that the valve in Tank Area B has never been used, and to date has served only as a precautionary measure. Catch basin CB-2 is located outside, under the awning covering the loading dock. As such, it is substantially protected from the elements, but can receive stormwater during the infrequent event that it flows onto the loading dock area due to high intensity precipitation. Both valves at Tank Area B and CB-2 are locked in the closed position to prevent unauthorized discharges, and the keys are stored in the Christenson Oil office. Should conditions arise that warrant a release of stormwater from within these containments, Christenson Oil BMPs require personnel to carefully inspect the stormwater for visual indications of petroleum contamination. Any petroleum contamination detected (i.e., sheen) must be removed prior to opening the valve. Additionally, since 2013, any stormwater accumulation in catch basin CB-2 has been managed by pump-out and off-site disposal, rather than being discharged to the oil/water separator to which it is connected.

- 5) Figure 4 of the SCE shows site drainage. This figure should be updated to fully show runoff and infiltration areas, as it is presumed that a portion of the Site infiltrates precipitation, as opposed to all runoff being transported down to CB-1 along the access road. Please also discuss the relative percentages of stormwater that are expected to: a) infiltrate, b) be captured by CB-1, or c) migrate offsite. Included in this analysis should be a discussion of the treated soil that was placed onsite.**

The Site Drainage Map has been revised accordingly (Figure 2). Approximately 64% of the Site is covered with a permeable surface whereon stormwater primarily infiltrates into the subsurface.¹ Adjacent to the northern property boundary, rain water may also flow to the day-lighted area of Green Creek which is then received by the City of Portland stormwater conveyance system where it intersects NW St. Helens Road. Sampling has been conducted at the Site to evaluate the quality of surface water in Green Creek as it exits Forest Park (upgradient of the Site), and as it enters the stormwater conveyance system at NW St. Helens Road (downgradient of the Site). Samples were analyzed for TPH, VOCs, SVOCs, PCBs, and total metals. Surface water sampling results indicated that contaminant concentrations do not increase as surface water in Green Creek travels adjacent to the Site. The Green Creek sampling data has been summarized in Table 8 of the SCE Report.

Approximately 36% of the Site is covered with impermeable surfaces, including paved areas (14%) and structures (22%). In paved areas, stormwater is directed to catch basin CB-1. Rainwater falling onto Site structures either infiltrates into the subsurface or is

¹ Percentages were determined based on surface area calculations using AutoCAD® drafting software.

captured by catch basin CB-1. During heavy storm events, stormwater runoff from impermeable areas may also enter catch basin CB-2, which is pumped out as necessary as discussed above.

Based on this analysis, it is estimated that approximately 80% of stormwater infiltrates into the subsurface; 15% is captured by catch basin CB-1; 4% is captured by Green Creek; and <1% is captured by catch basin CB-2.

Petroleum impacted soil removed during the decommissioning of three underground storage tanks was treated onsite by rototill-assisted aeration between 1991 and 1993. Following receipt of analytical data confirming that petroleum hydrocarbon constituents were not detected in the treated soil, the soil was spread on the area west of the access road, approximately between wells MW-1 and MW-7. Precipitation in this unpaved area infiltrates into the subsurface (Figure 2).

6) The SCE focused on the Plant side or Eastern portion of the Site only. Please describe the runoff that occurs on the Warehouse or West side of the Site, and whether runoff migrates during rain events.

Christenson Oil has operated at two adjacent addresses on NW St. Helens Road.² Industrial activities, including bulk fuel storage and blending, are conducted only at the 3821 NW St. Helens Road address (Plant Property). Structures at 3865 NW St. Helens Road (Warehouse Property) include an office and a covered, enclosed warehouse space. Products stored in the warehouse are individually packaged for shipping and are stored on skids and shrink-wrapped. There have been no environmental issues at the Warehouse Property, and a permit sample point has not been designated for stormwater discharges. The Plant Property and Warehouse Property are separated hydraulically by Green Creek.

Approximately 78% of the Warehouse Property is covered with impermeable surfaces, including asphalt paving and the office and warehouse structure. Stormwater infiltration occurs over much of the permeable surfaces, with the exception of the day-lighted area of Green Creek, on the south side of the property.

Green Creek flows into a City of Portland culvert beneath NW St. Helens Road and ultimately discharges through the City of Portland's Outfall 18. Stormwater exiting the Warehouse Property from impermeable surfaces generally flows toward two catch basins located in the right-of-way in NW St. Helens Road, both owned and maintained by the City of Portland as part of its shared stormwater conveyance system. The City of Portland's stormwater conveyance system from these catch basins runs north beneath

² As of August 31, 2014, Christenson Oil's lease at 3865 NW St. Helens Road ended. Since then, it no longer occupies or conducts any activities at the 3865 NW St. Helens Road property.

and parallel to NW St. Helens Road, turns east beneath NW Kittredge Avenue, and discharges at the City of Portland's Outfall No. 19.

Attachments:

- Attachment A – SCE Data Curves
- Attachment B – Heritage Survey Map
- Figure 1 – Detailed Site Plan
- Figure 2 – Site Drainage Map

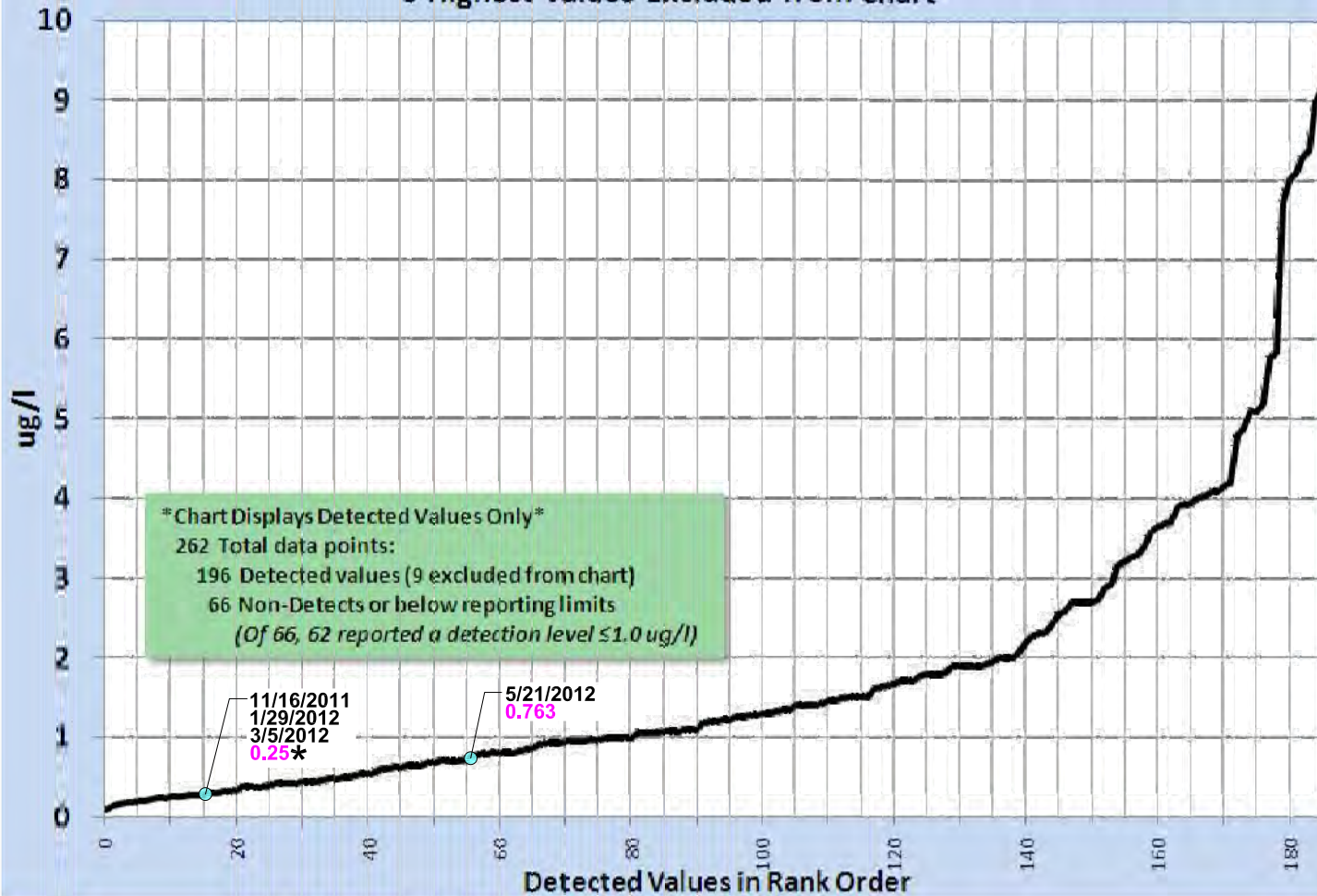
REFERENCES

Wohlers Environmental Services, Inc. (Wohlers). 2006. *Expanded Preliminary Assessment Report, Christenson Oil Facility, 3821 NW St. Helens Road, Portland, Oregon*. December 4

_____. 2009. *Spill Prevention Control & Countermeasure Plan, Christenson Oil Facility, 3821-3865 NW St. Helens Road, Portland, Oregon*. May 30

Arsenic (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

9 Highest Values Excluded from Chart



Legend

µg/l micrograms per liter

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

5/21/2012 sample date
0.763 result



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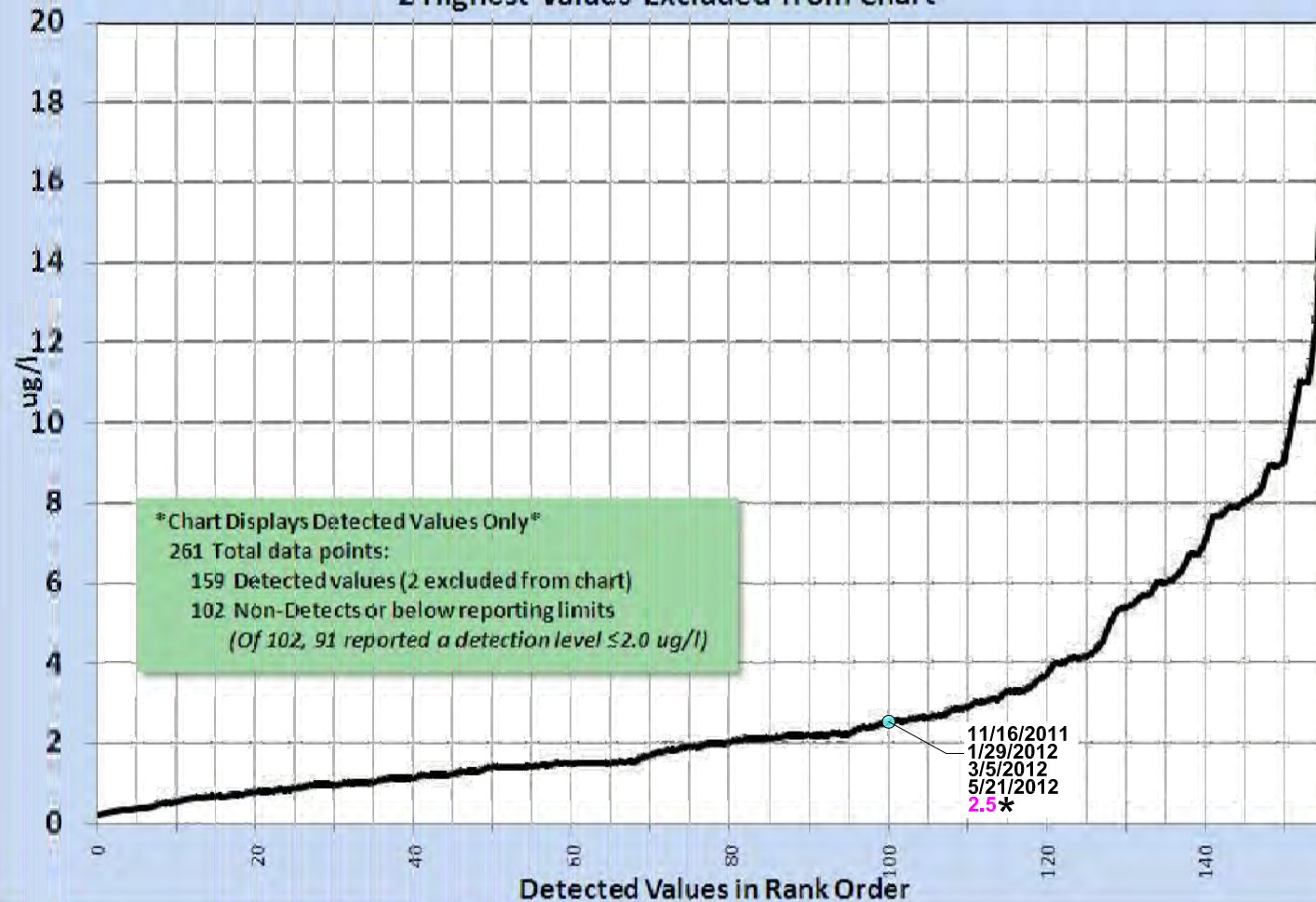
Christenson Oil Company
3821 N.W. St. Helens Rd.
Portland, Oregon

PN: 123-001

Arsenic in Stormwater

Bis(2-Ethylhexyl)phthalate in Stormwater at Portland Harbor Heavy Industrial Sites

2 Highest Values Excluded from Chart



Legend

- $\mu\text{g/l}$ micrograms per liter
- * Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit
- 5/21/2012 sample date
- 2.5* result



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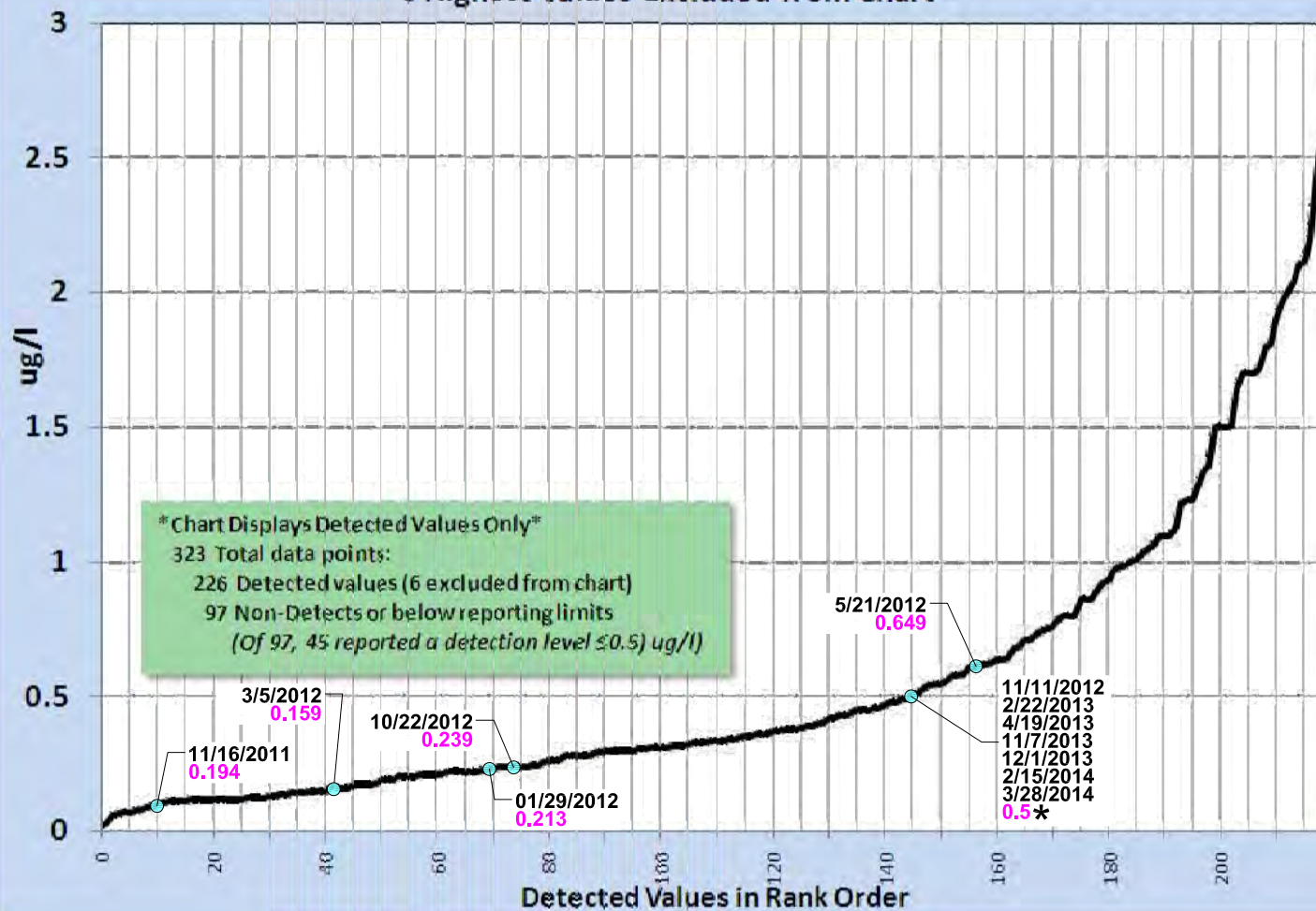
Christenson Oil Company
 3821 N.W. St. Helens Rd.
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Bis(2-ethylhexyl)phthalate in Stormwater

Cadmium (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

6 Highest Values Excluded from Chart



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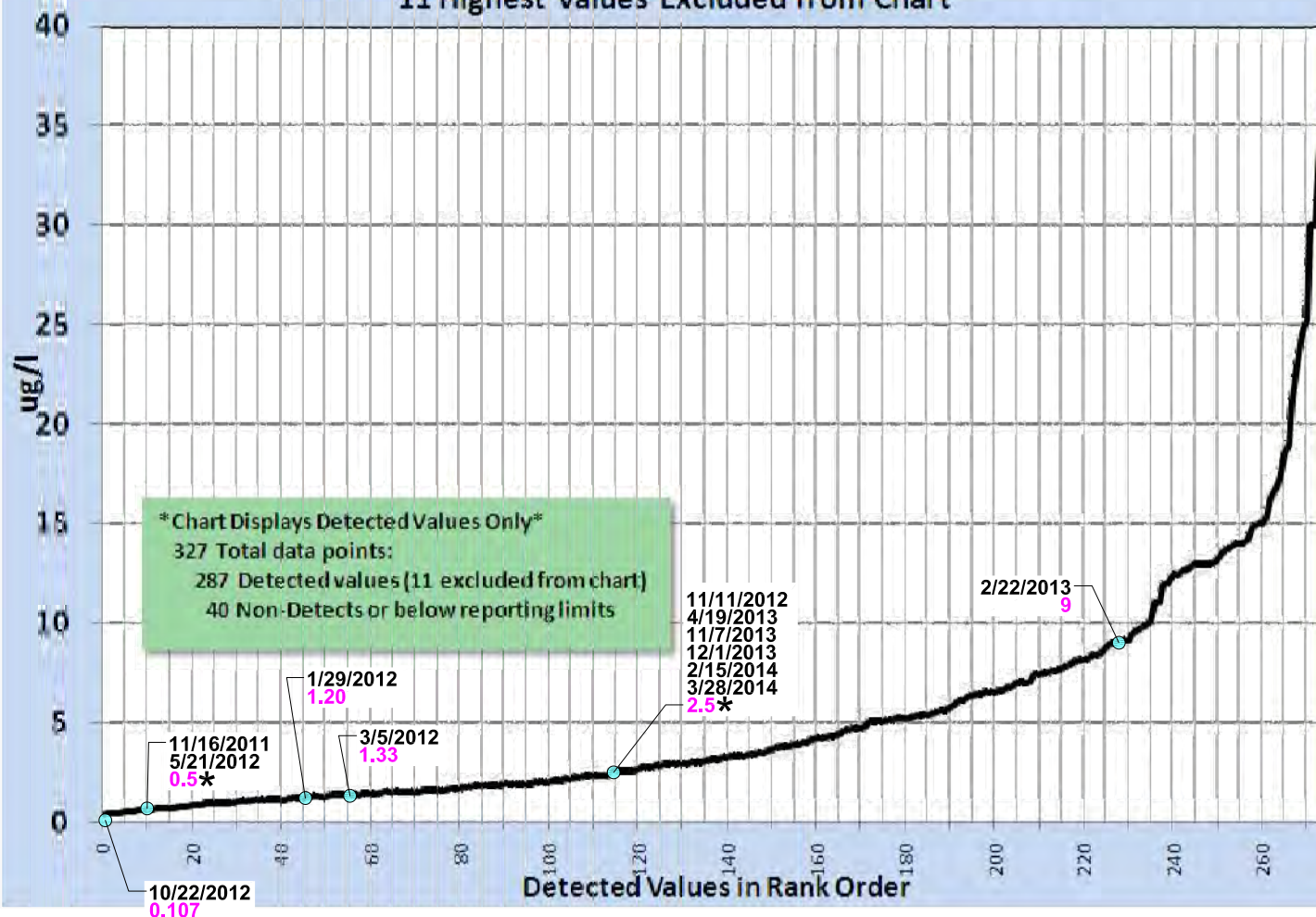
Christenson Oil Company
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 Portland, Oregon

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Cadmium in Stormwater

Chromium (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

11 Highest Values Excluded from Chart



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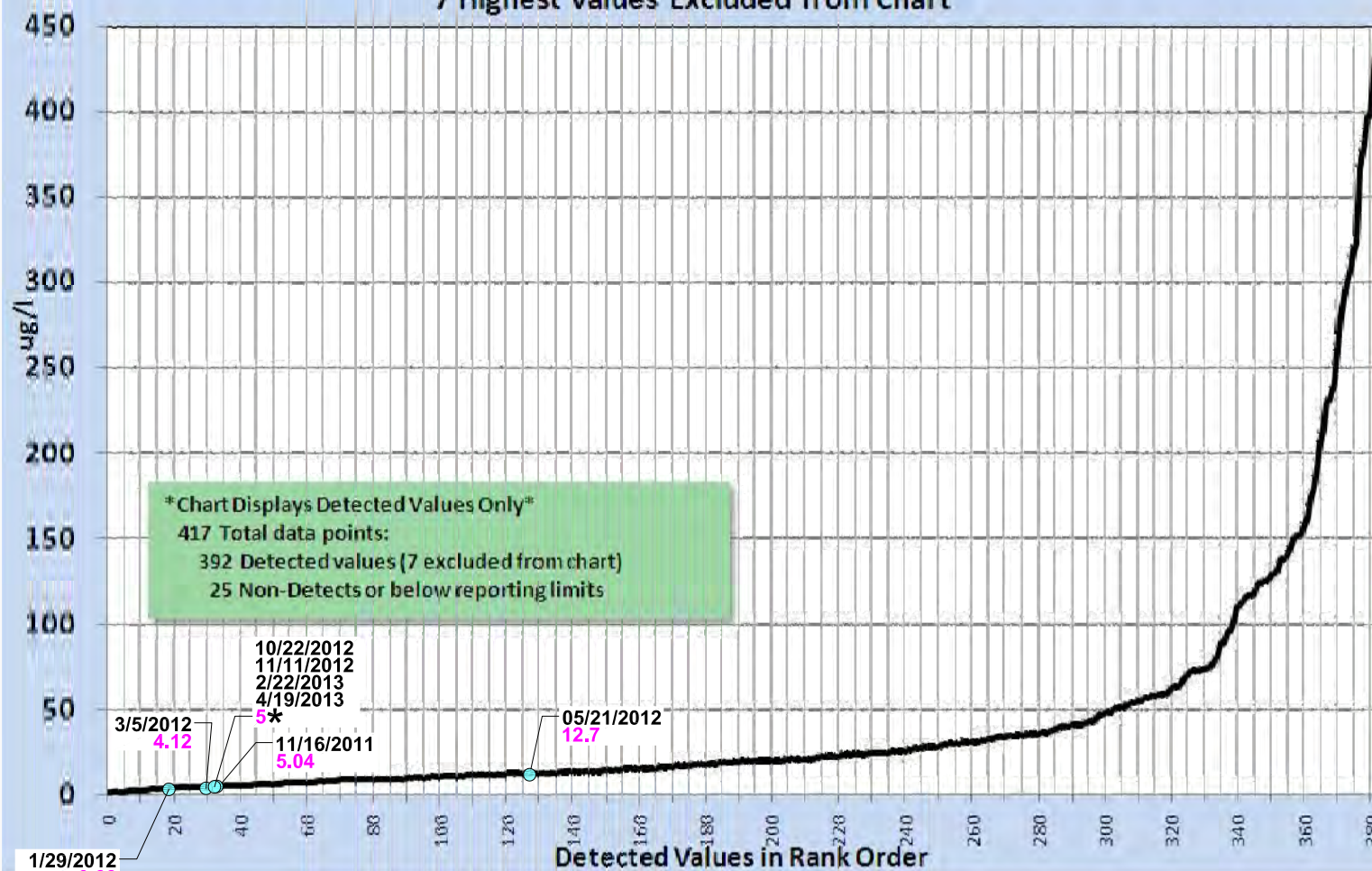
Christenson Oil Company
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Portland, Oregon

PN: 123-001

Chromium in Stormwater

Copper (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

7 Highest Values Excluded from Chart



Legend

µg/l micrograms per liter

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

05/21/2012 sample date
12.7 result



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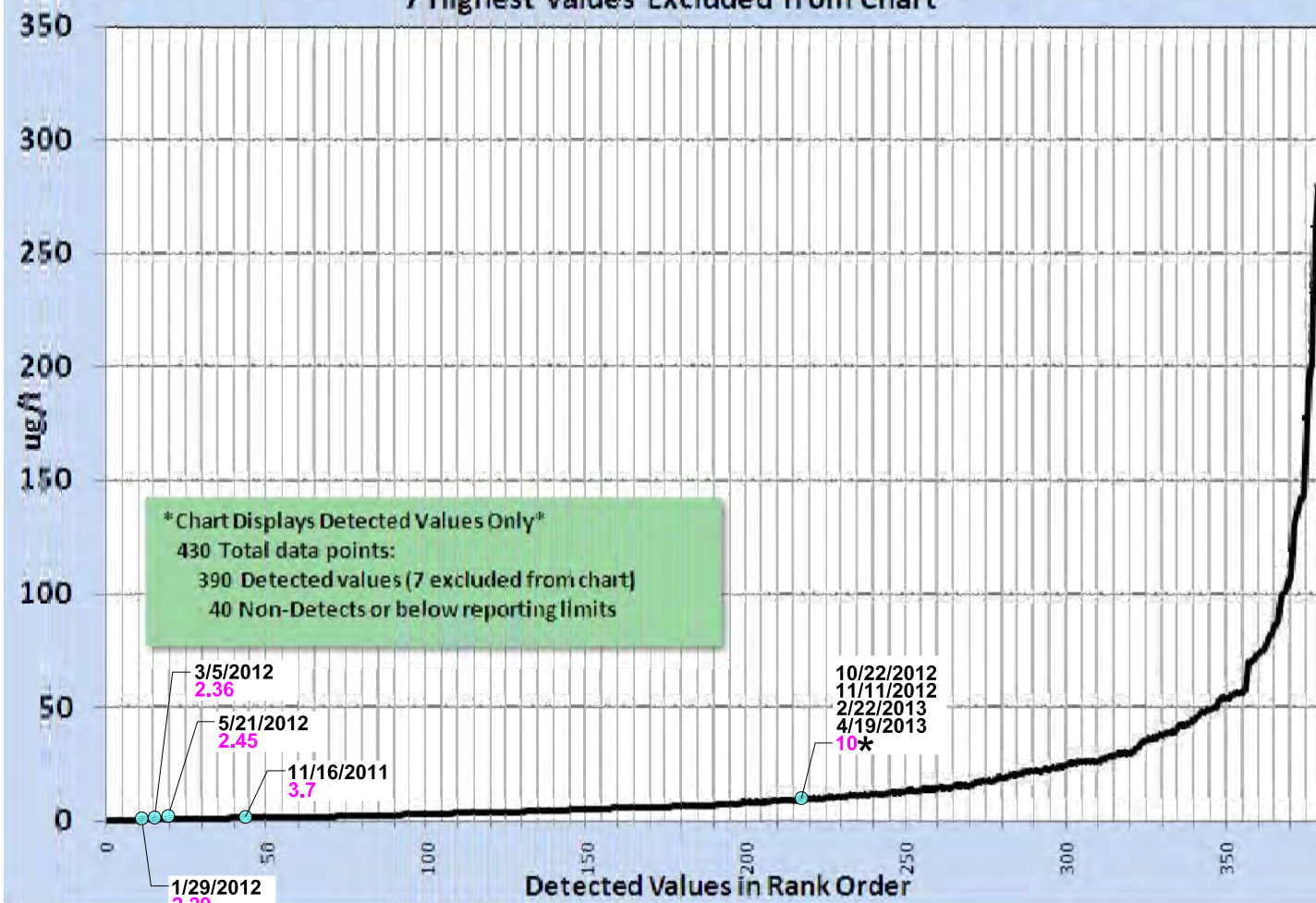
Christenson Oil Company
 3821 N.W. St. Helens Rd.
 Portland, Oregon

PN: 123-001

Copper in Stormwater

Lead (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

7 Highest Values Excluded from Chart



Legend

µg/l micrograms per liter

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

5/21/2012 sample date
2.45 result



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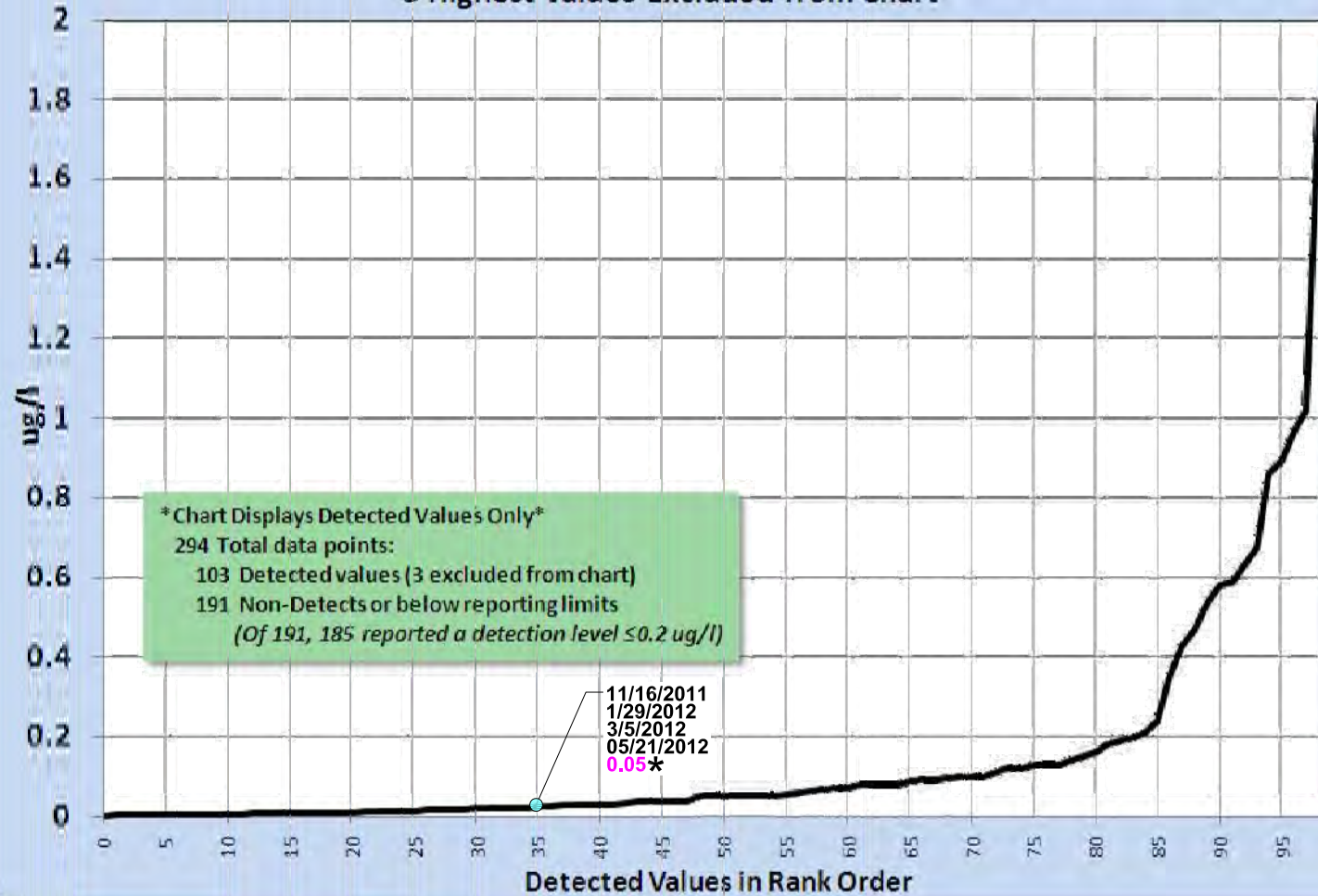
Christenson Oil Company
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Portland, Oregon

PN: 123-001

Lead in Stormwater

Mercury (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

3 Highest Values Excluded from Chart



Legend

ug/l micrograms per liter

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

11/16/2011 sample date
0.05* result



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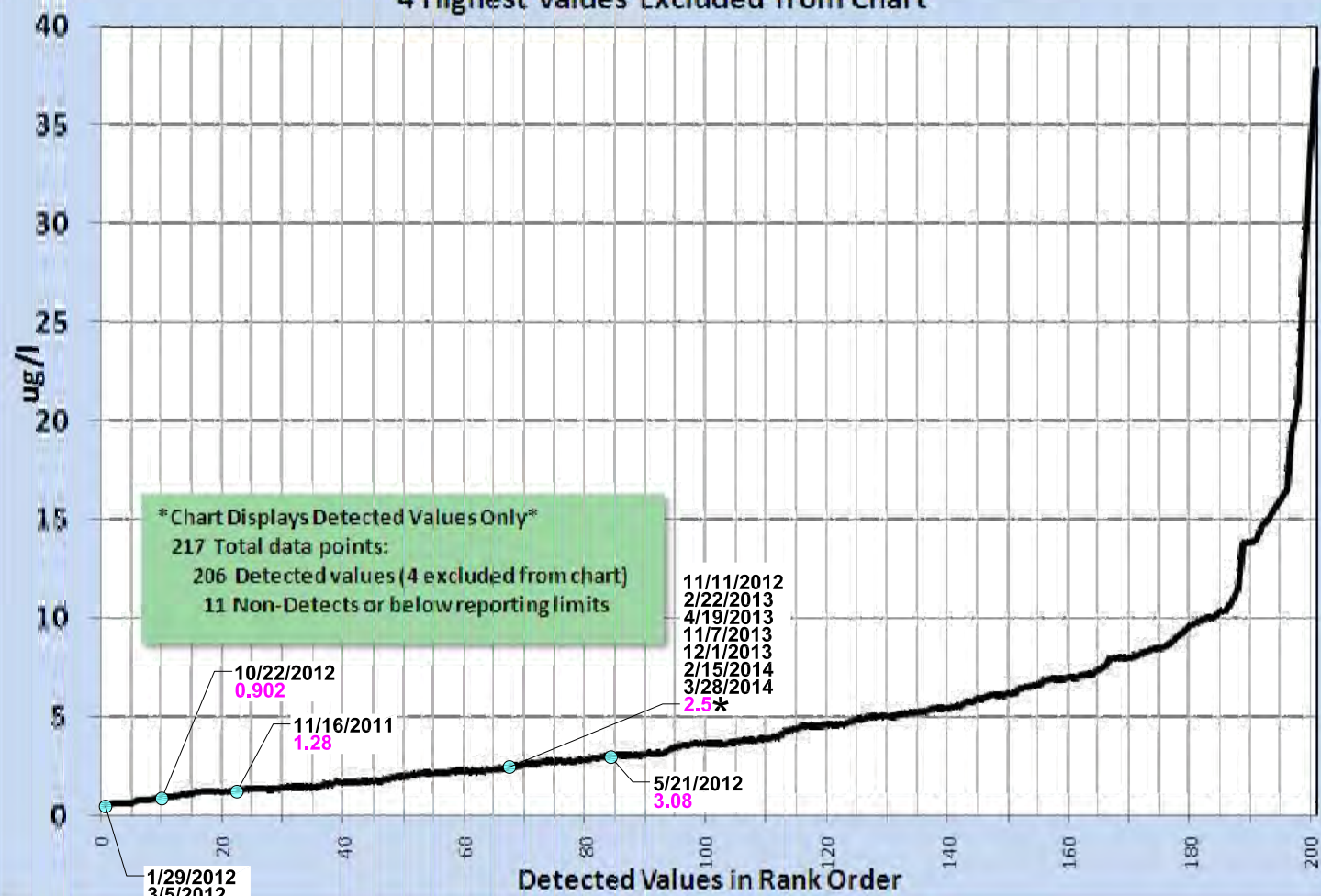
Christenson Oil Company
3821 N.W. St. Helens Rd.
Portland, Oregon

PN: 123-001

Mercury in Stormwater

Nickel (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

4 Highest Values Excluded from Chart



Legend

µg/l micrograms per liter

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

5/21/2012 sample date
 3.08 result



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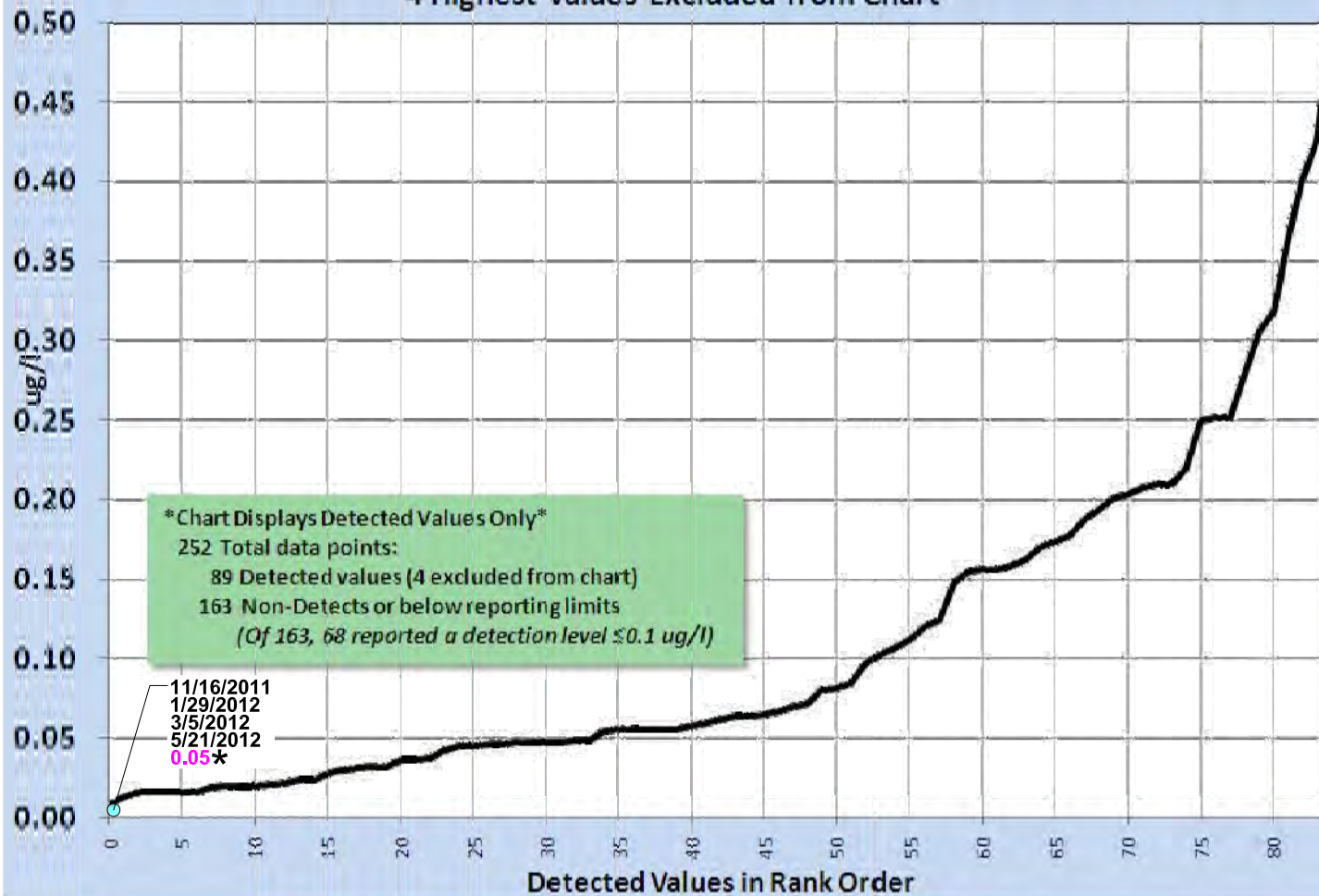
Christenson Oil Company
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 Portland, Oregon

PN: 123-001

Nickel in Stormwater

Silver (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

4 Highest Values Excluded from Chart



Legend

µg/l micrograms per liter

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

11/16/2011 sample date
0.05* result



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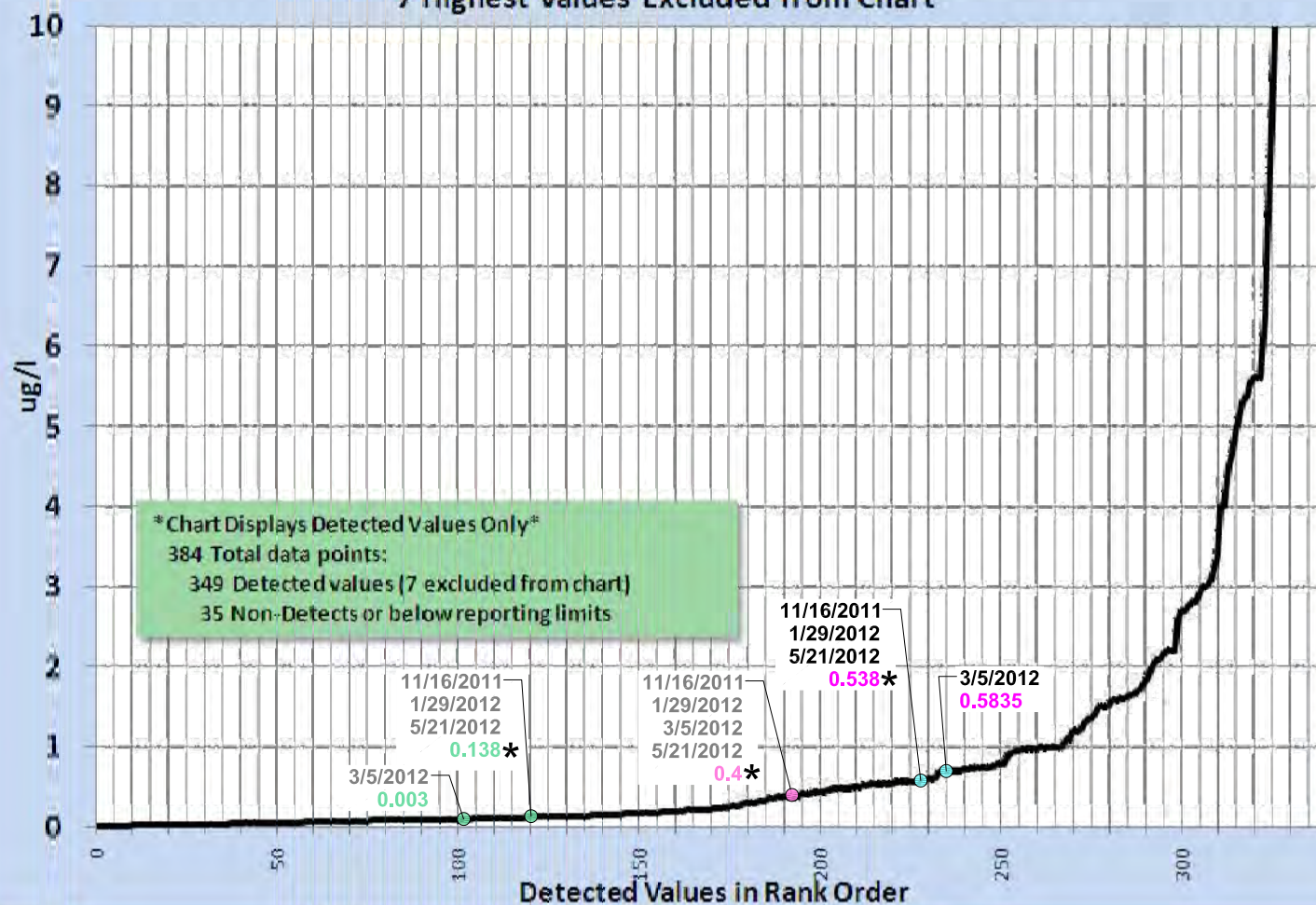
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Silver in Stormwater

Total PAHs (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

7 Highest Values Excluded from Chart



Legend

µg/l micrograms per liter

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

11/16/2011
0.538*
Total PAHs
sample date
result

11/16/2011
0.138*
Total HPAHs
sample date
result

3/5/2012
0.003
Total LPAHs
sample date
result

PAHs polycyclic aromatic
hydrocarbons

HPAHs heavy polycyclic aromatic
hydrocarbons

LPAHs light polycyclic aromatic
hydrocarbons



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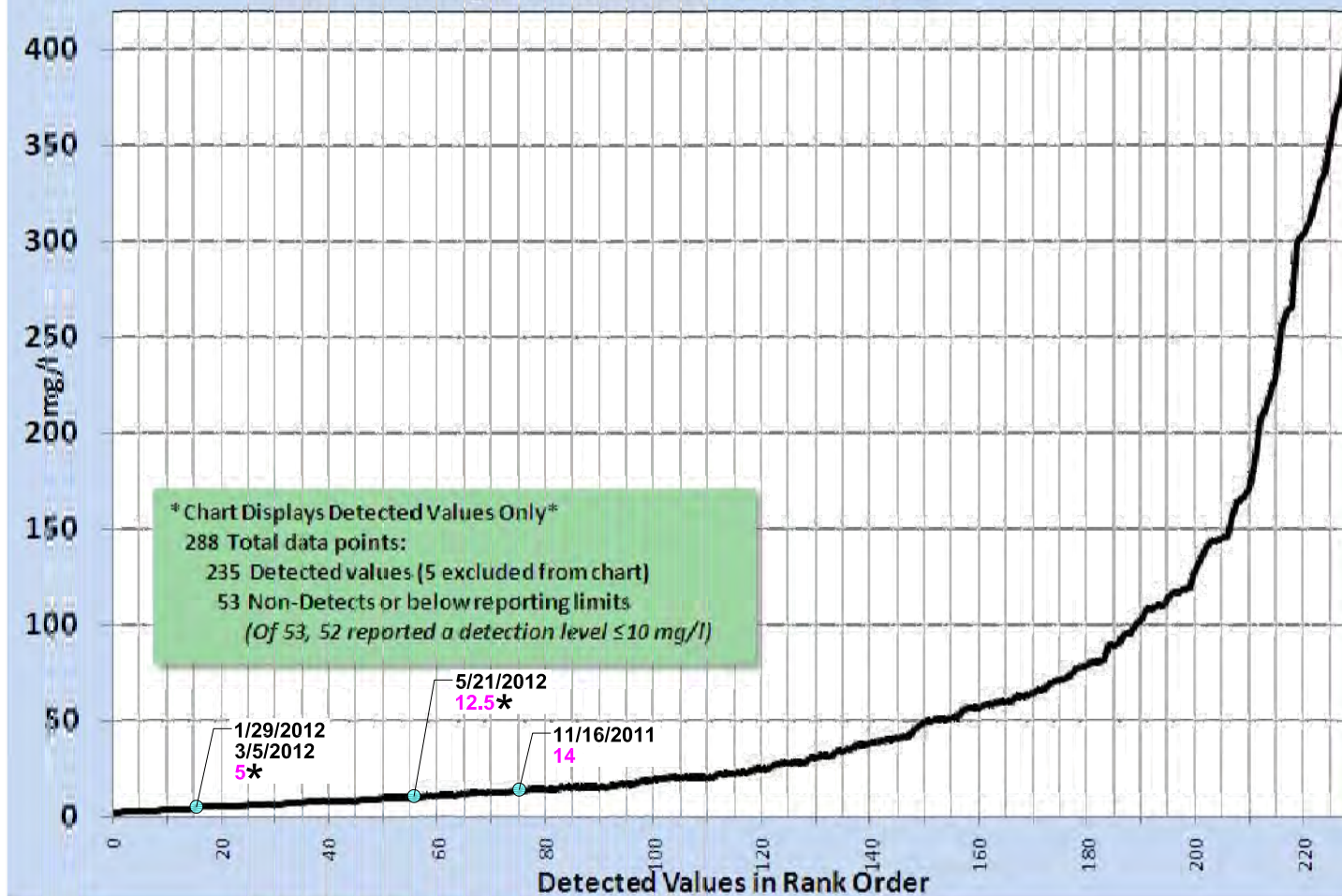
Christenson Oil Company
3821 N.W. St. Helens Rd.
Portland, Oregon

PN: 123-001

Total PAHs in Stormwater

TSS (mg/l) in Stormwater at Portland Harbor Heavy Industrial Sites

5 Highest Values Excluded from Chart



Legend

- mg/l milligrams per liter
- * Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit
- 11/16/2011 sample date
- 14 result
- TSS total suspended solids



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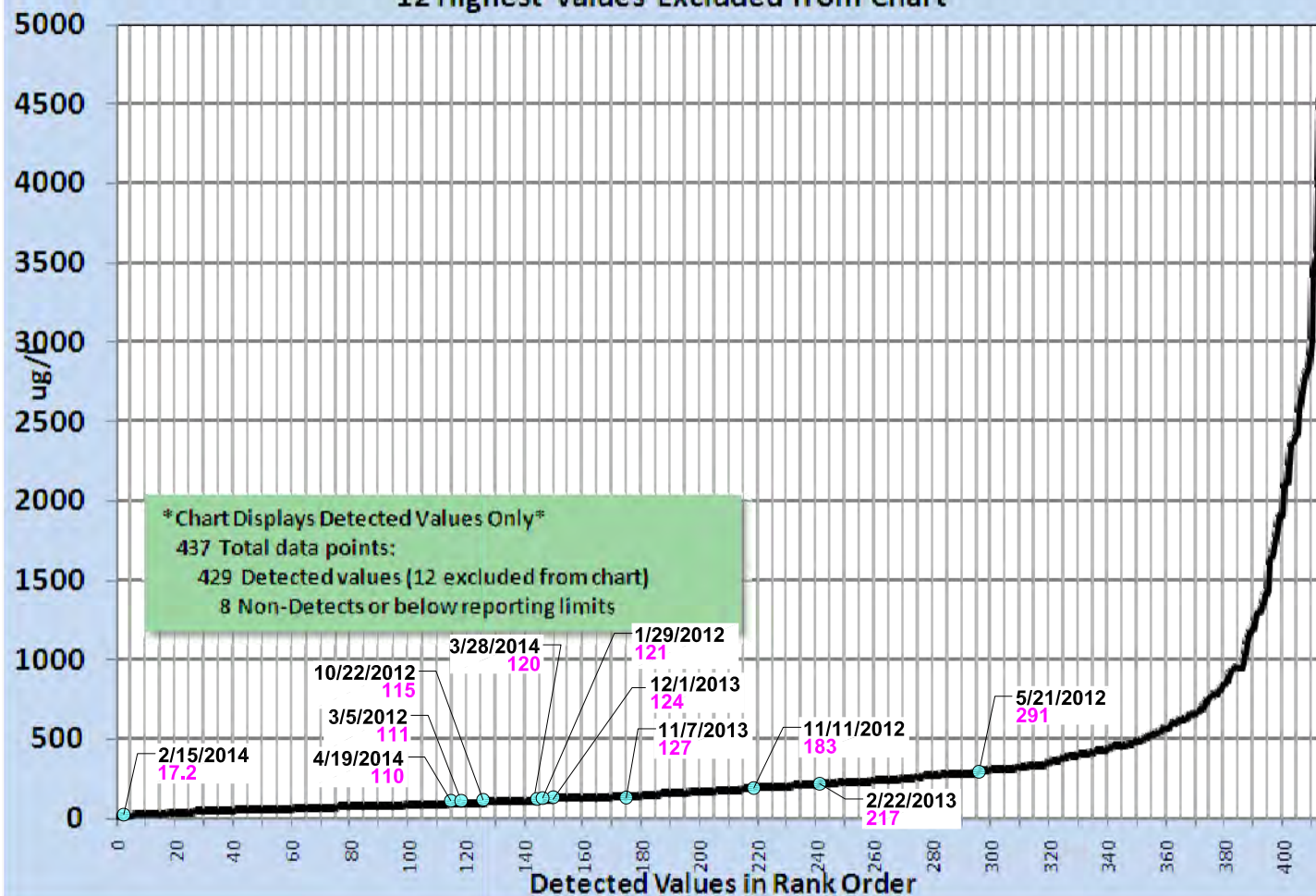
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Total TSSs in Stormwater

Zinc (ug/l) in Stormwater at Portland Harbor Heavy Industrial Sites

12 Highest Values Excluded from Chart



Legend

µg/l micrograms per liter

5/21/2012 sample date
291 result



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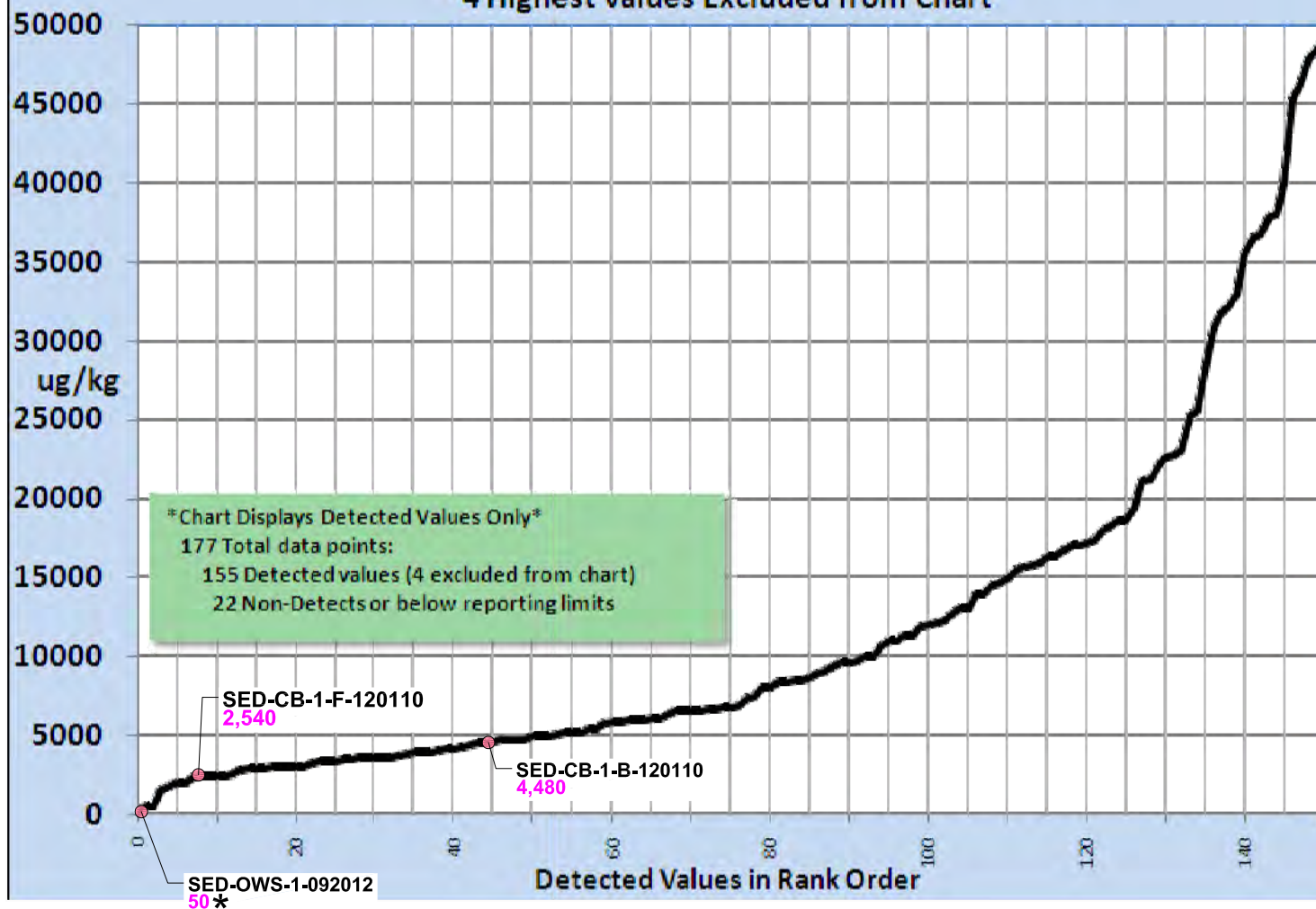
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 Portland, Oregon

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Zinc in Stormwater

Arsenic (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

4 Highest Values Excluded from Chart



Legend

µg/kg micrograms per kilogram

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

SED-CB-1-B-120110 sample ID result
4,480



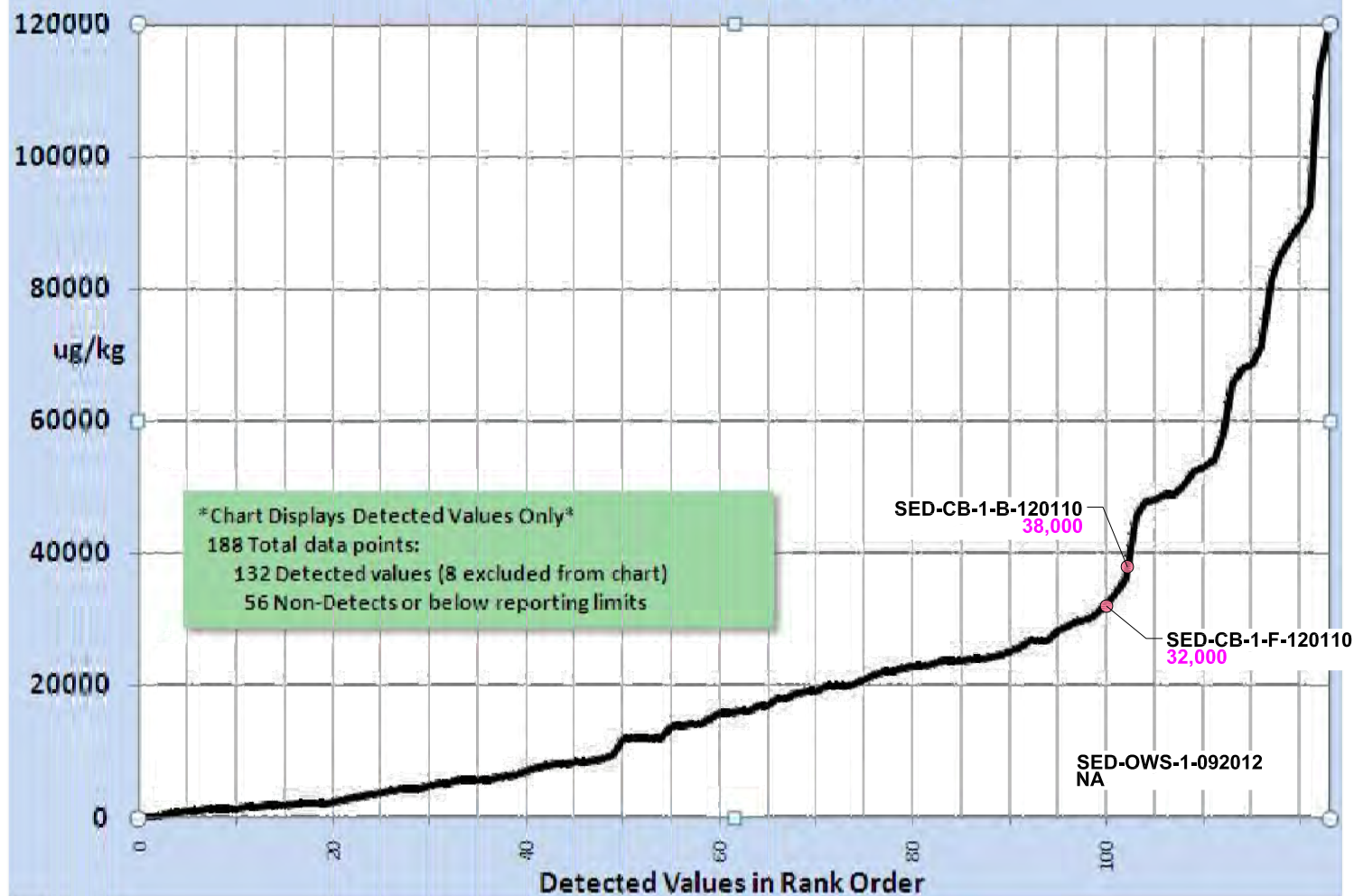
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 Portland, Oregon

PN: 123-001

Arsenic in Stormwater Sediments

Bis(2-Ethylhexyl)phthalate in Stormwater Sediments at Portland Harbor Heavy Industrial Sites 8 Highest Values Excluded from Chart



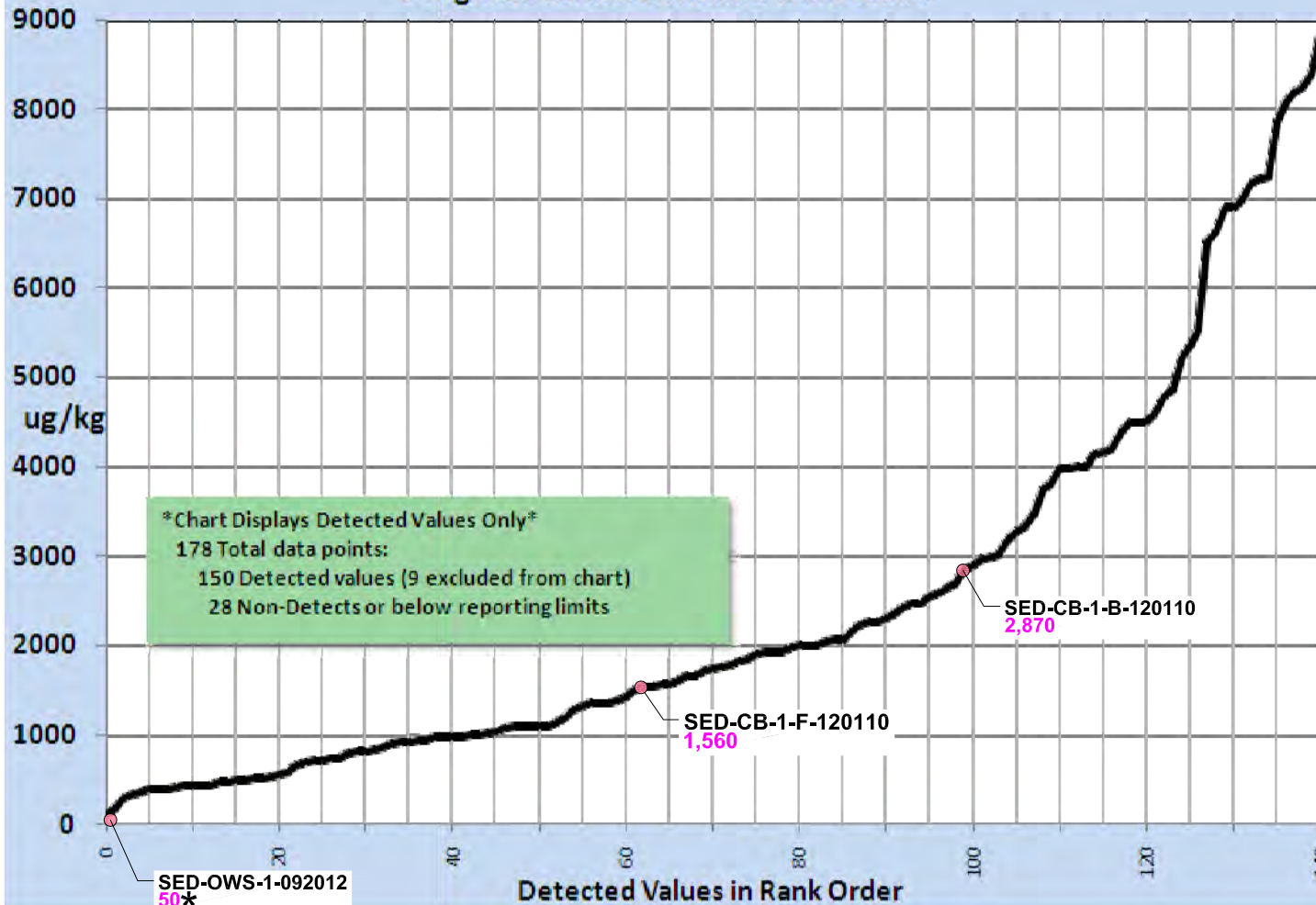
Legend

μg/kg	micrograms per kilogram
NA	not analyzed
SED-CB-1-B-120110 38,000	sample ID result



Cadmium (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

9 Highest Values Excluded from Chart



Legend

μg/kg micrograms per kilogram

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

SED-CB-1-B-120110 sample ID
2,870 result



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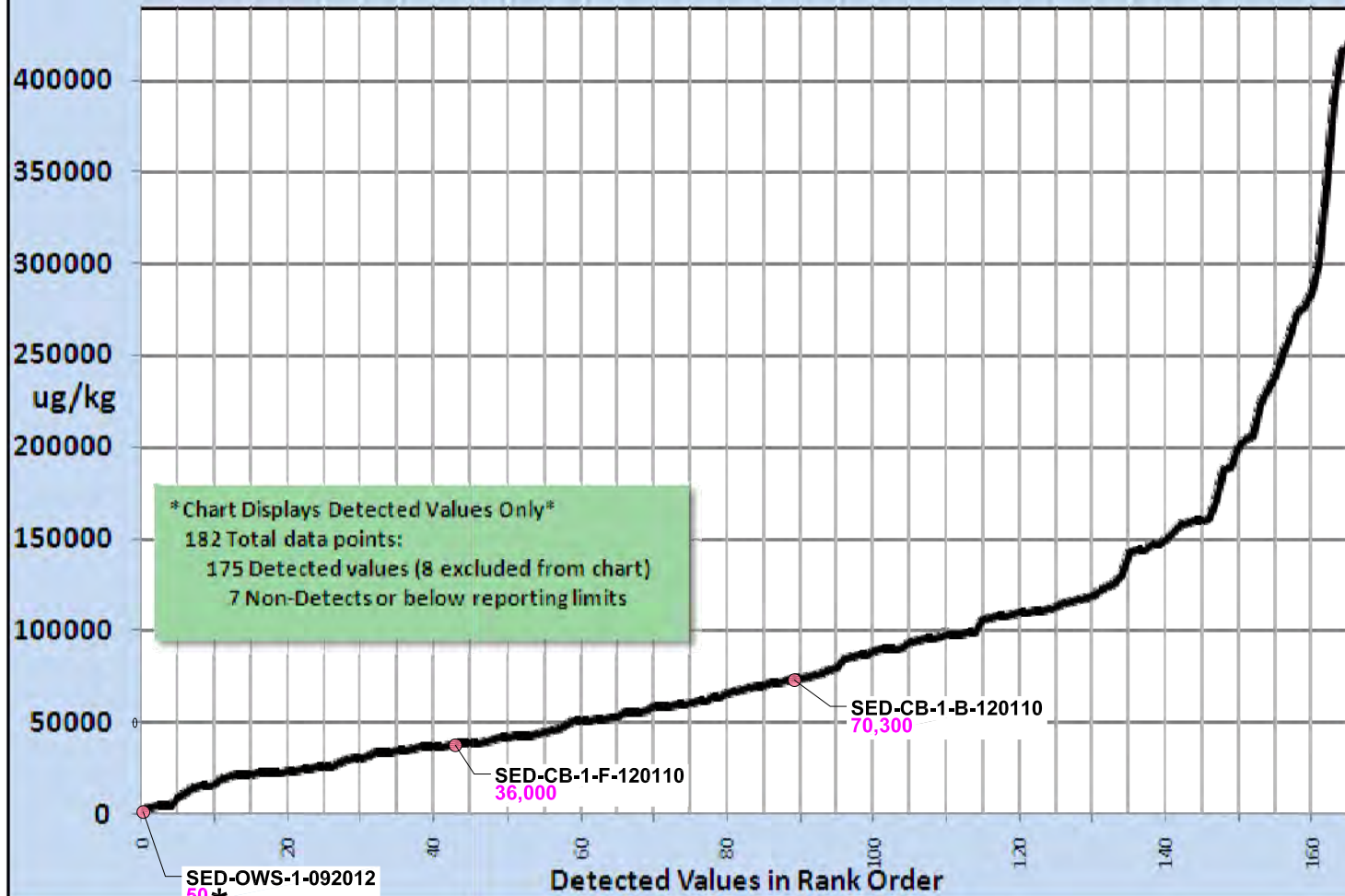
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Portland, Oregon

PN: 123-001

Cadmium in Stormwater Sediments

Chromium (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

8 Highest Values Excluded from Chart



Legend

- μg/kg micrograms per kilogram
- * Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit
- SED-CB-1-B-120110 sample ID
70,300 result



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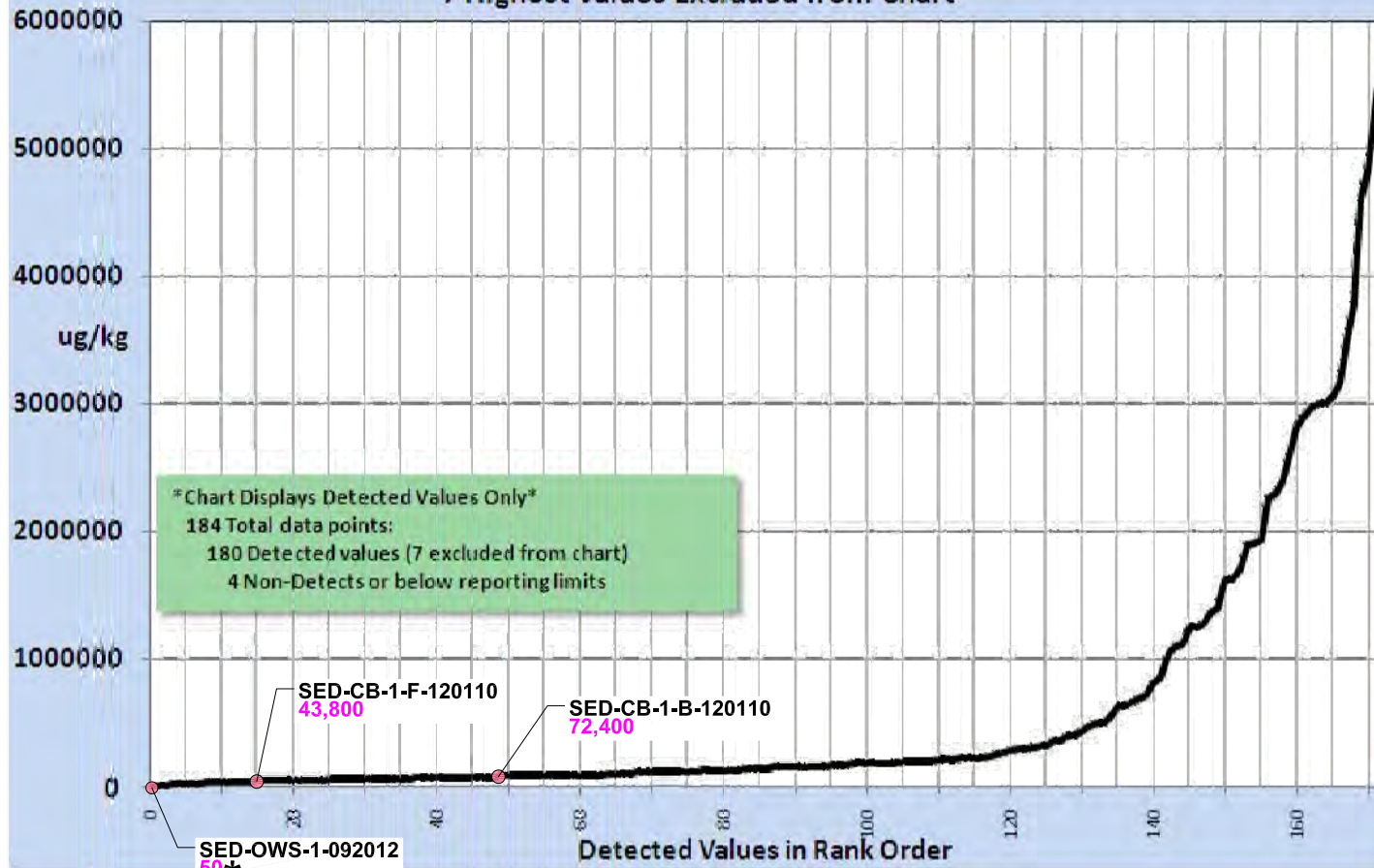
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Chromium in Stormwater Sediments

Copper (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

7 Highest Values Excluded from Chart



Legend

μg/kg micrograms per kilogram

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

SED-CB-1-B-120110 sample ID
72,400 result



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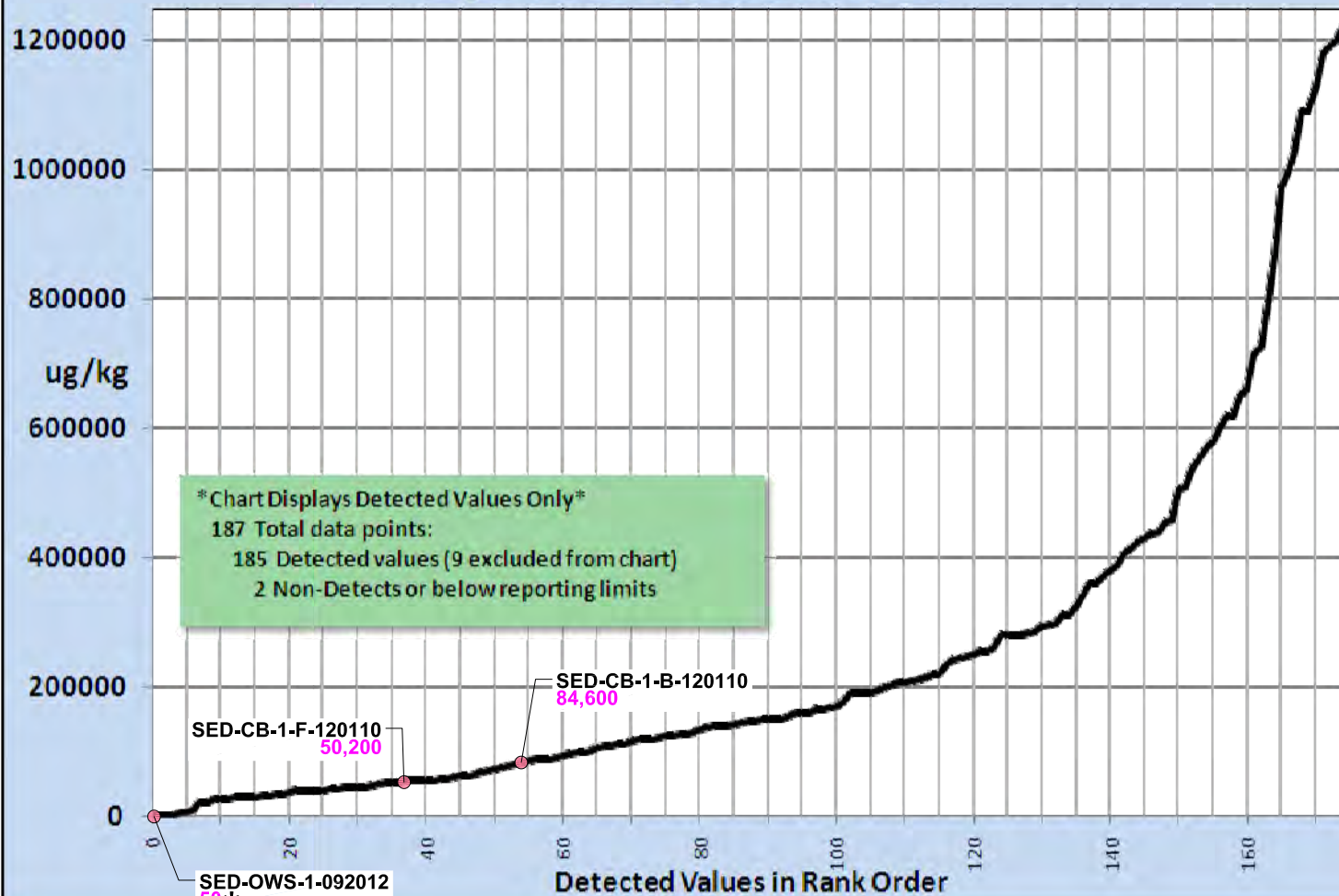
Christenson Oil Company
 3821 N.W. St. Helens Rd.
 Portland, Oregon

PN: 123-001

Copper in Stormwater Sediments

Lead (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

9 Highest Values Excluded from Chart



Legend

ug/kg micrograms per kilogram

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

SED-CB-1-B-120110 sample ID
 84,600 result



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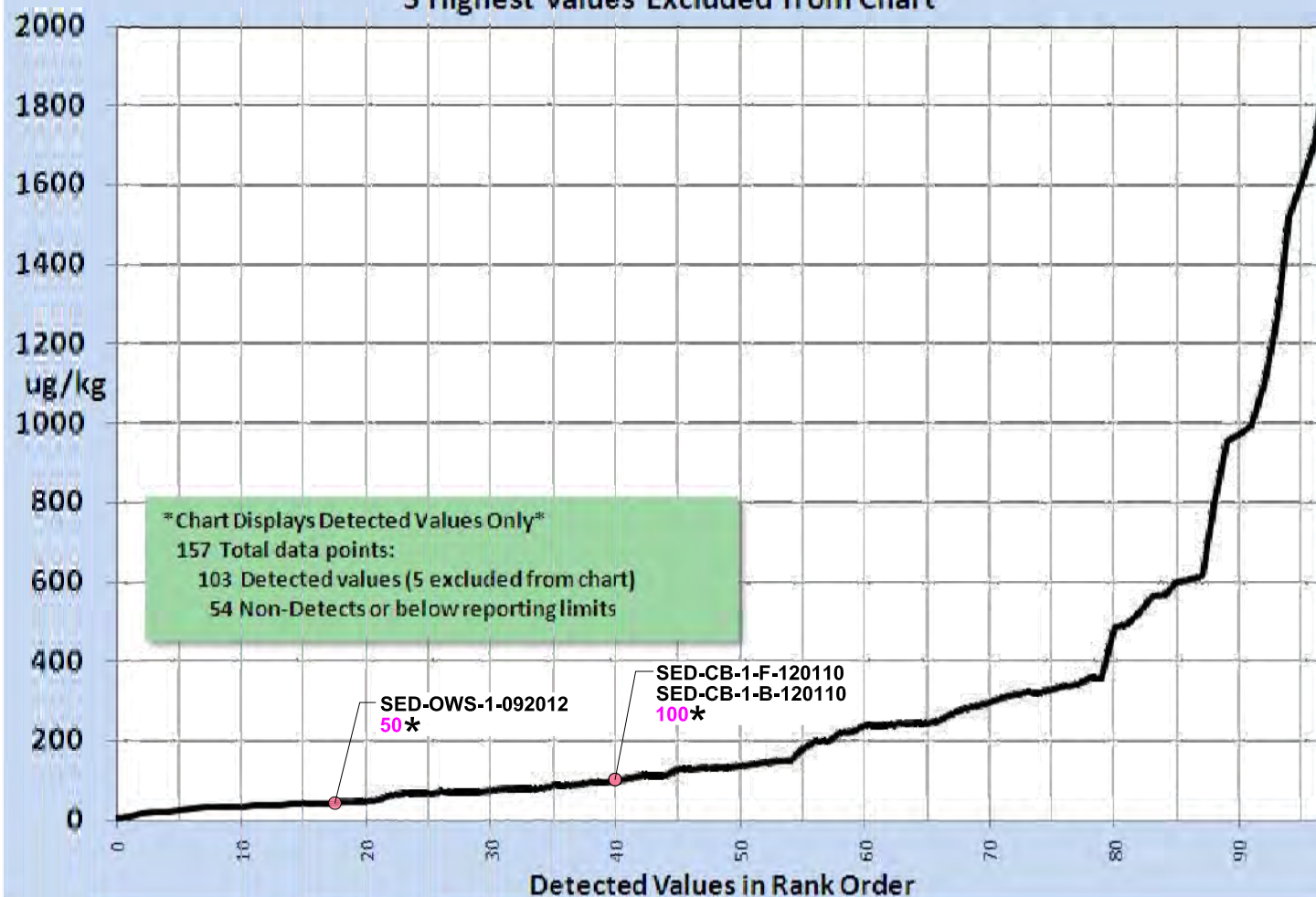
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Lead in Stormwater Sediments

Mercury (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

5 Highest Values Excluded from Chart



Legend

μg/kg micrograms per kilogram

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

SED-CB-1-B-120110 sample ID
50* result



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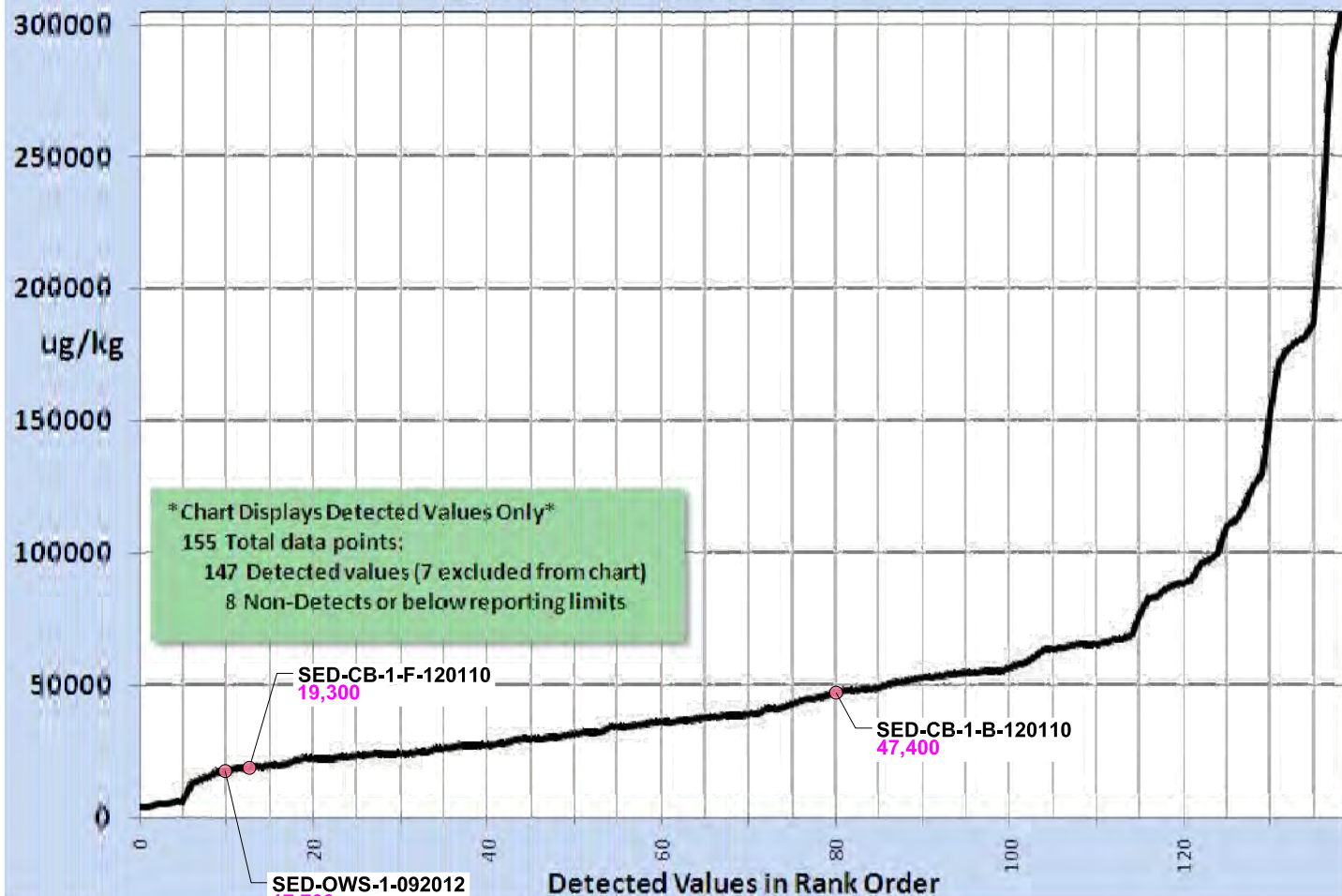
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Mercury in Stormwater Sediments

Nickel (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

7 Highest Values Excluded from Chart



Legend

μg/kg micrograms per kilogram

SED-CB-1-B-120110 sample ID
47,400 result



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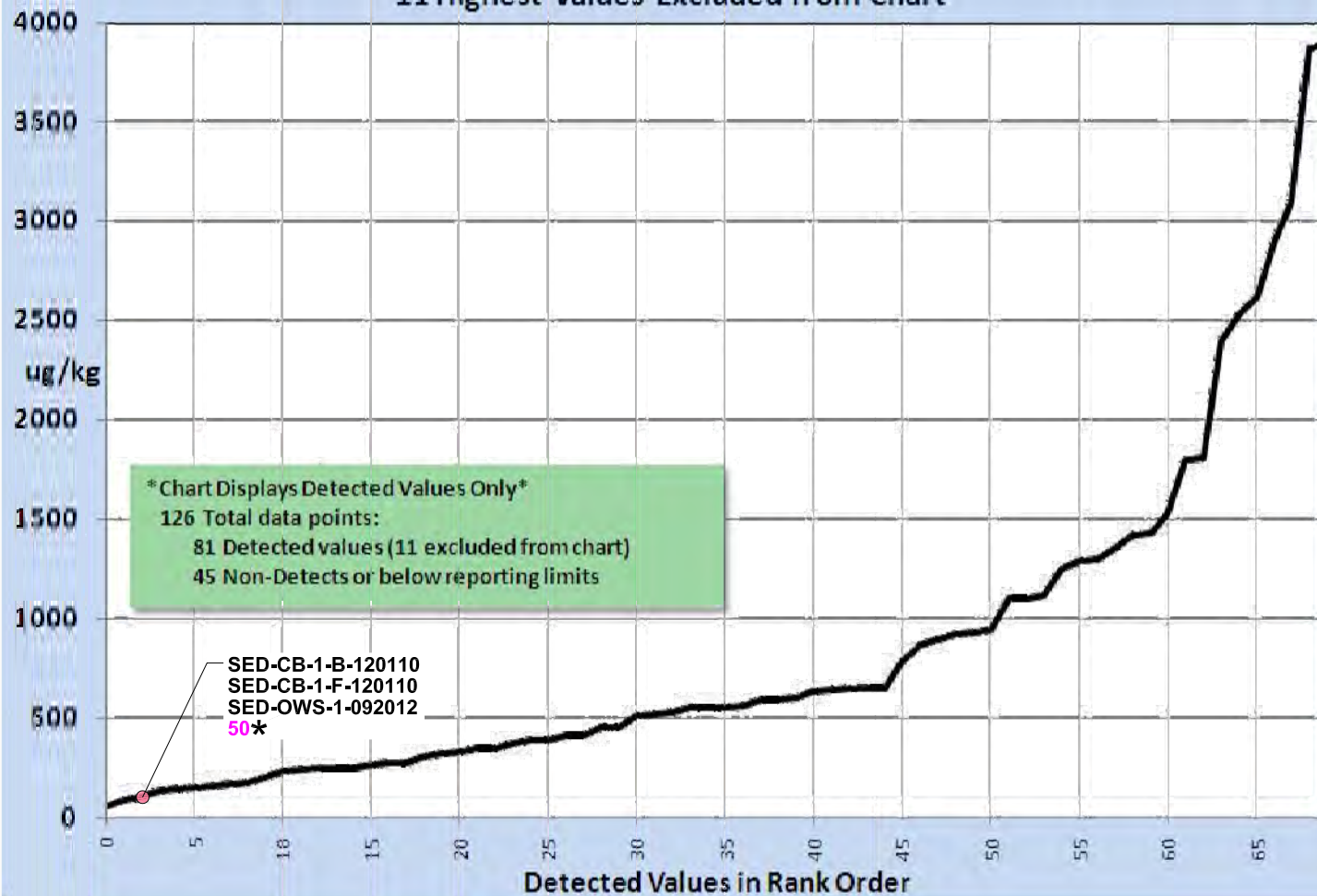
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Portland, Oregon

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Nickel in Stormwater Sediments

Silver (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

11 Highest Values Excluded from Chart



Legend

μg/kg micrograms per kilogram

* Concentration was not detected above the laboratory detection limit; data is estimated at half of the achieved detection limit

SED-CB-1-B-120110 sample ID
50* result



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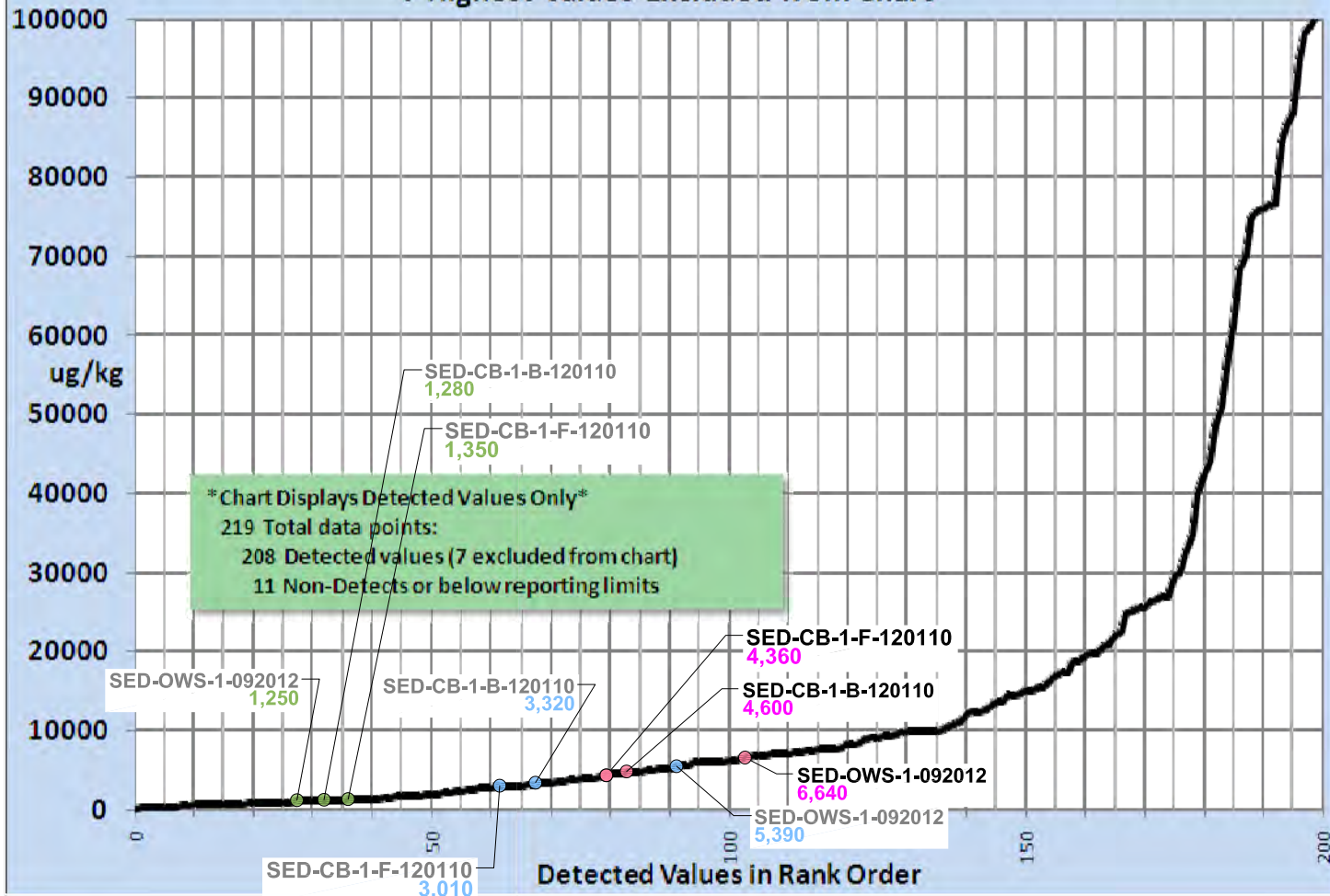
Christenson Oil Company
3821 N.W. St. Helens Rd.
Portland, Oregon

PN: 123-001

Silver in Stormwater Sediments

Total PAHs (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

7 Highest Values Excluded from Chart



Legend

µg/kg micrograms per kilogram

SED-CB-1-B-120110
4,360 Total PAHs sample ID result

SED-CB-1-B-120110
3,320 HPAHs sample ID result

SED-CB-1-B-120110
1,280 LPAHs sample ID result

PAHs polycyclic aromatic hydrocarbons

HPAHs heavy polycyclic aromatic hydrocarbons

LPAHs light polycyclic aromatic hydrocarbons



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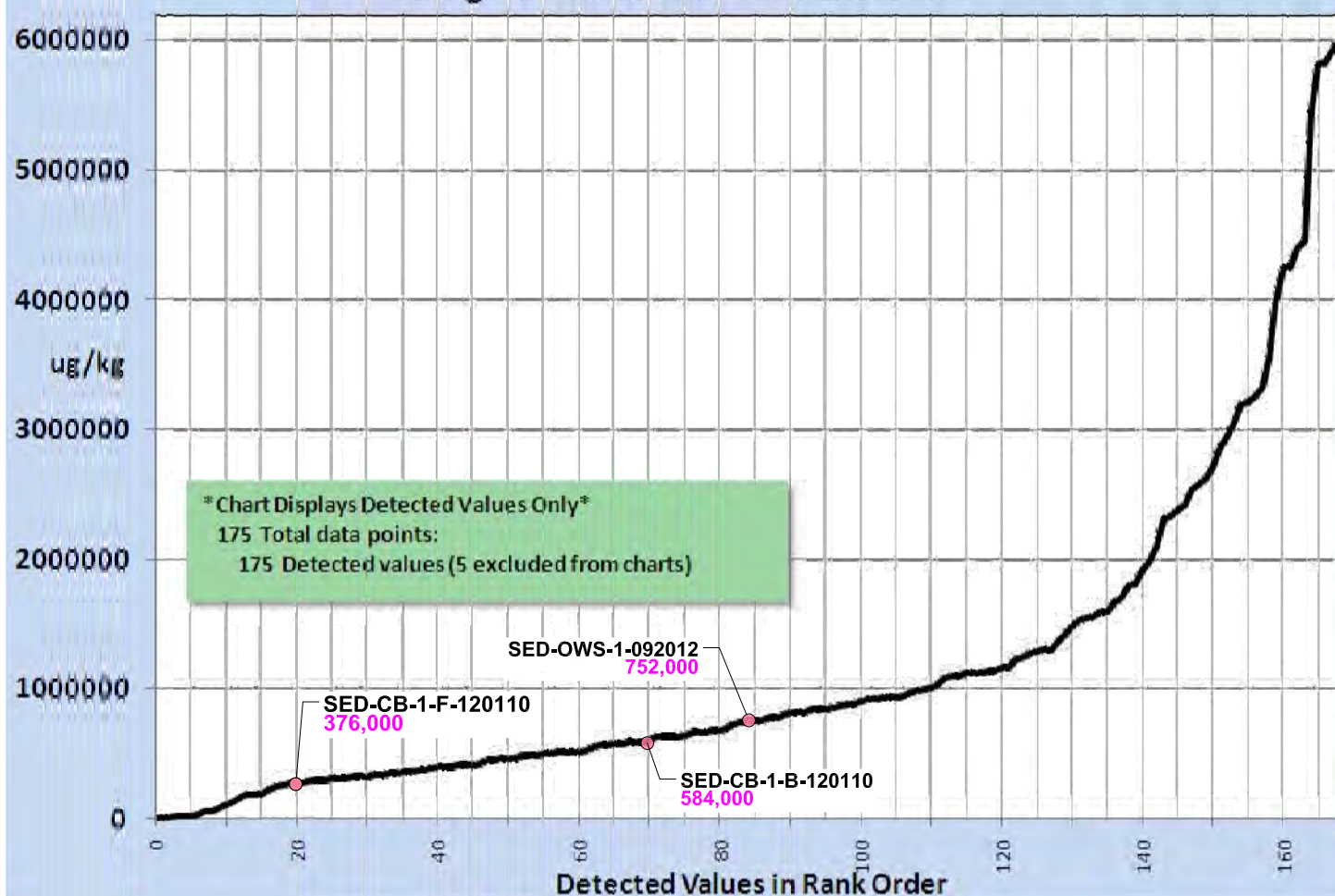
Christenson Oil Company
3821 N.W. St. Helens Rd.
Portland, Oregon

PN: 123-001

Total PAHs in Stormwater Sediments

Zinc (ug/kg) in Stormwater Sediments at Portland Harbor Heavy Industrial Sites

5 Highest Values Excluded from Chart



Legend

ug/kg micrograms per kilogram

SED-CB-1-B-120110 sample ID
584,000 result



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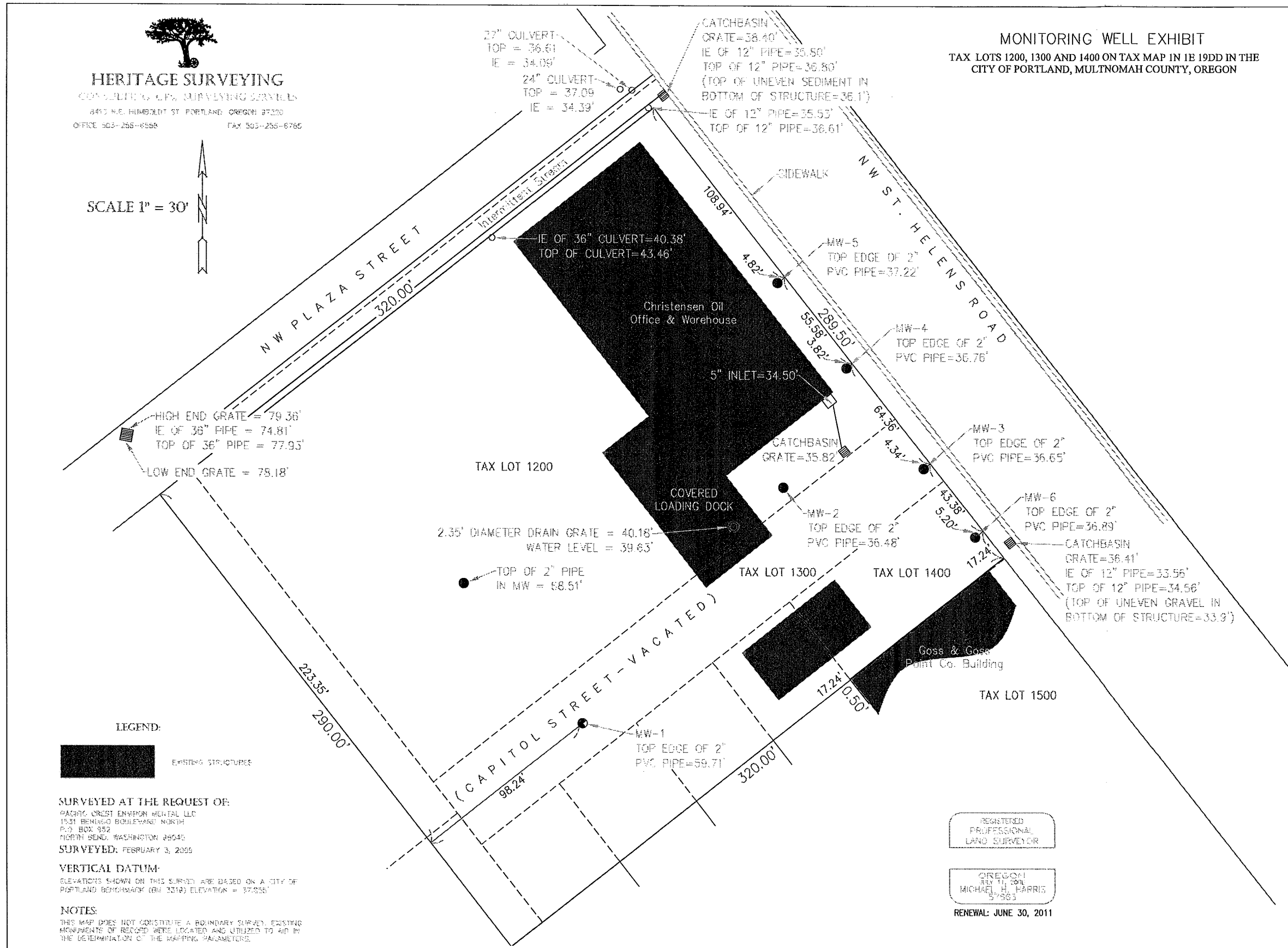
Zinc in Stormwater Sediments



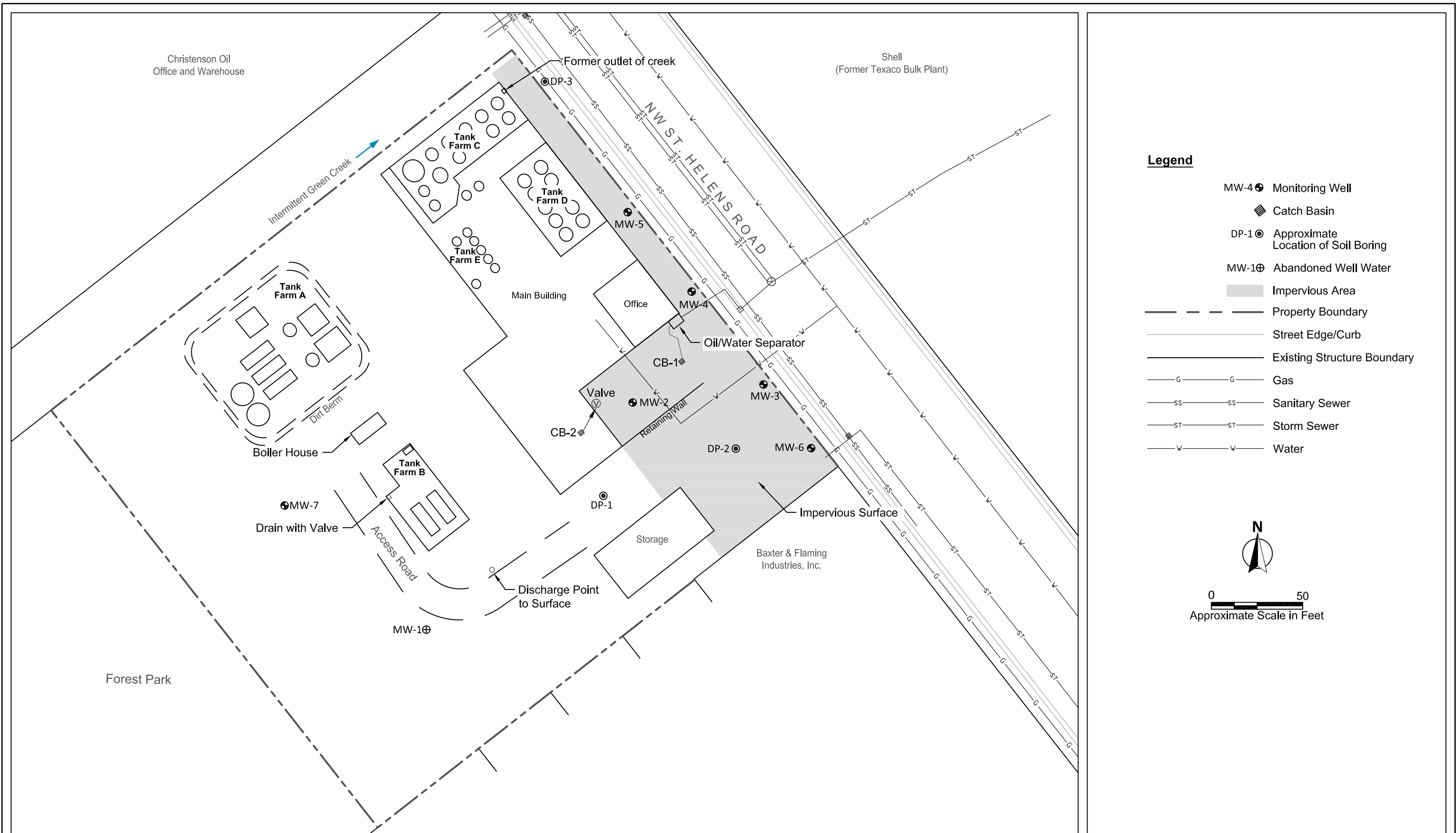
HERITAGE SURVEYING

CONSULTING & SURVEYING SERVICES
8452 N.E. HUMBOLDT ST. PORTLAND, OREGON 97220
OFFICE 503-255-6558 FAX 503-255-6760

SCALE 1" = 30'



10/28/2014 Drafting 123-001-058.dwg FIG 1 SCER Admnd



9/29/2014 Drafting 123-001-058.dwg FIG 2 SCE Amnd

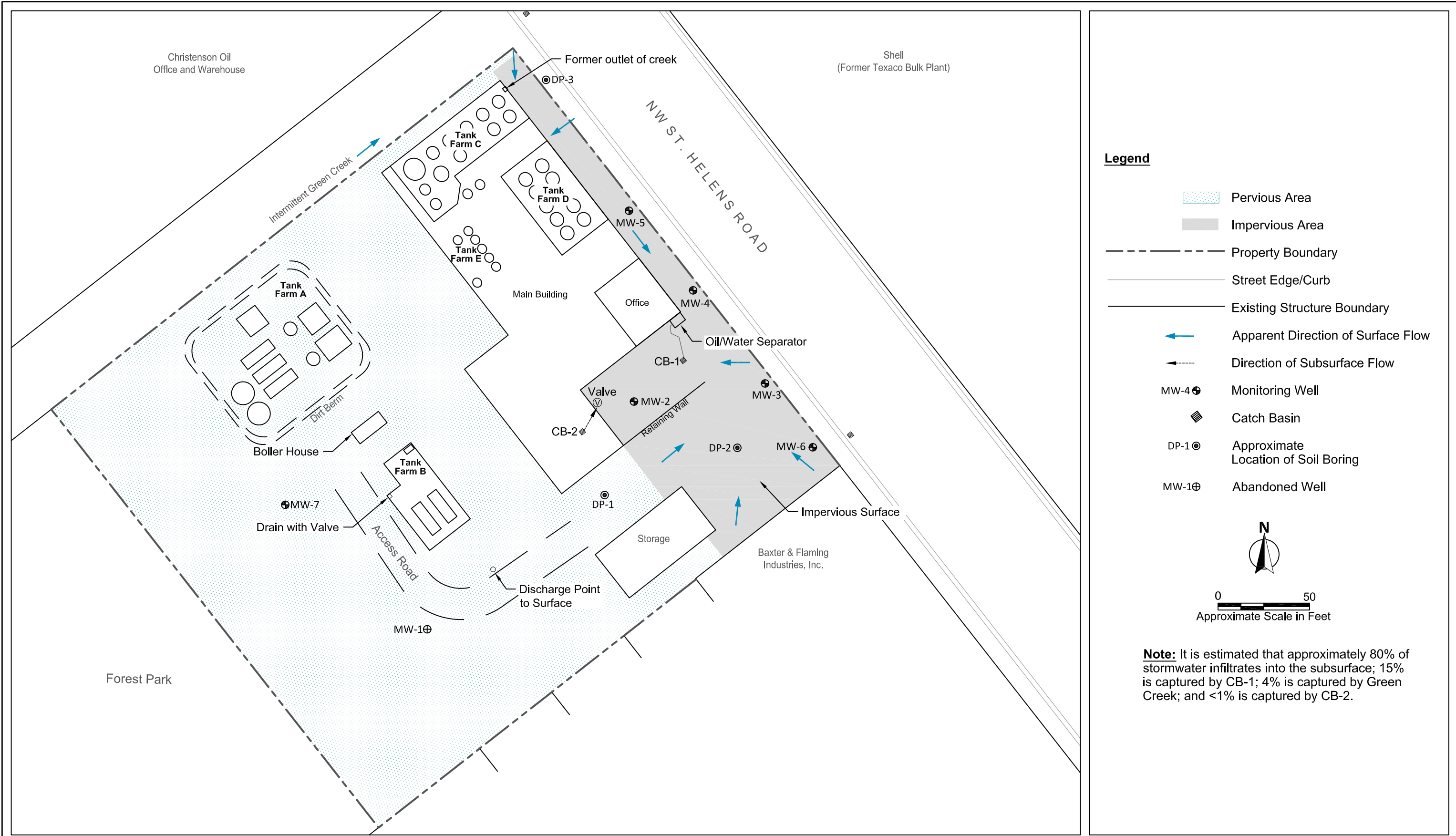


Figure 2
Site Drainage Map